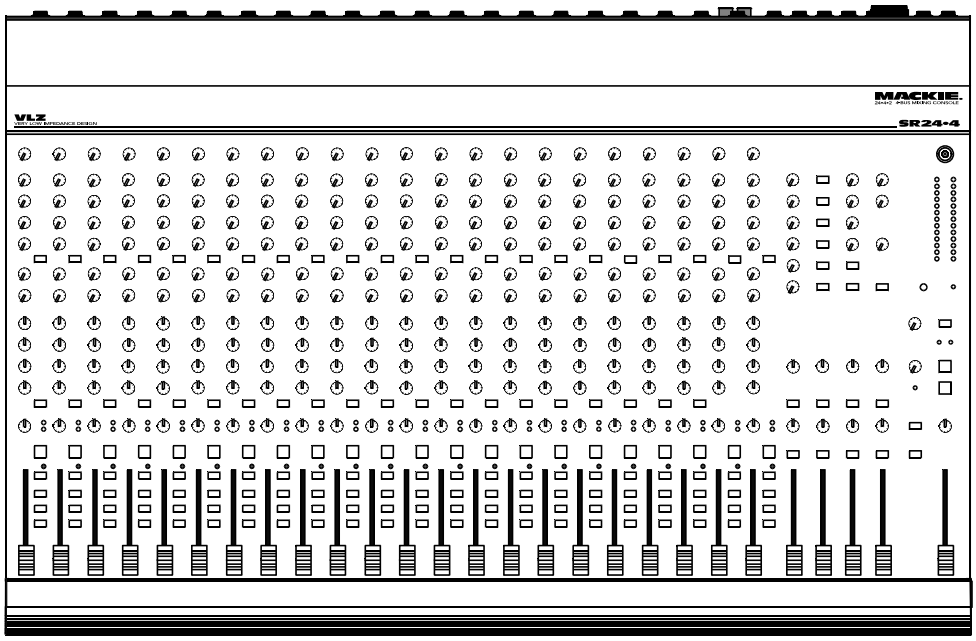
MACKIE®

SR24•4

4 BUS MIXING CONSOLE



SERVICE MANUAL

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820-175-00

SERVICE ON THIS EQUIPMENT IS TO BE PERFORMED BY
EXPERIENCED REPAIR TECHNICIANS ONLY
CONFIER L'ENTRETIEN AU PERSONNEL QUALIFIE

CAUTION *AVIS*

RISK OF ELECTRIC SHOCK
DO NOT OPEN
RISQUE DE CHOC ELECTRIQUE
NE PAS OUVRIR

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE THE COVER (OR BACK)
NO USER SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED PERSONNEL

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE

TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

ATTENTION: POUR EVITER LES RISQUES DE CHOC ELECTRIQUE, NE PAS ENLEVER LE COUVERCLE. AUCUN ENTRETIEN DE PIECES INTERIEURES PAR L'USAGER. CONFIER L'ENTRETIEN AU PERSONNEL QUALIFIE.

AVIS:POUR EVITER LES RISQUES D'INCENDIE OU D'ELECTROCUTION, N'EXPOSEZ PAS CET ARTICLE A LA PLUIE OU A L'HUMIDITE.

POUR PREVENIR LES CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UN PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS LAISSER AUCUNE PARTIE A DECOUVERT.

This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

ATTENTION :Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant las limites applicables aux appareils numériques de class A/de class B (selon le cas) prescrites dans le réglement sur le brouillage radioélectrique édicté par les ministere des communications du Canada.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio energy and, if not installed properly and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure, that may be of sufficient magnitude to constitute a risk of electric shock to persons.

Le symbole éclair avec point de flèche à l'intérieur d'un triangle équilatéral est utilisé pour alerter l'utilisateur de la présence à l'intérieur du coffret de "voltage dangereux" non isolé d'ampleur suffisante pour constituer un risque d'éléctrocution.

The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Le point d'exclamation à l'intérieur d'un triangle équilatéral est employé pour alerter les utilisateurs de la présence d'instructions importantes pour le fonctionnement et l'entretien (service) dans le livret d'instruction accompagnant l'appareil.

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Technical Support 3
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ALL BOARDS

INTRODUCTION

SERVICE ON THIS EQUIPMENT IS TO BE PERFORMED BY
EXPERIENCED REPAIR TECHNICIANS ONLY
CONFIER L'ENTRETIEN AU PERSONNEL QUALIFIE

This manual contains basic service information. It is essential that you have a copy of the user's manual as this contains the complete operating instructions.

SERVICE TECHNICAL ASSISTANCE

Mackie Designs, Service Technical Assistance, is available 8AM - 5PM PST, Monday through Friday for Authorized Mackie Service Centers, at 1-800-258-6883. Feel free to call with any questions and speak with a carefully-calibrated technician. If one is not available, leave a detailed message and a qualified Mackoid will return your call asap.

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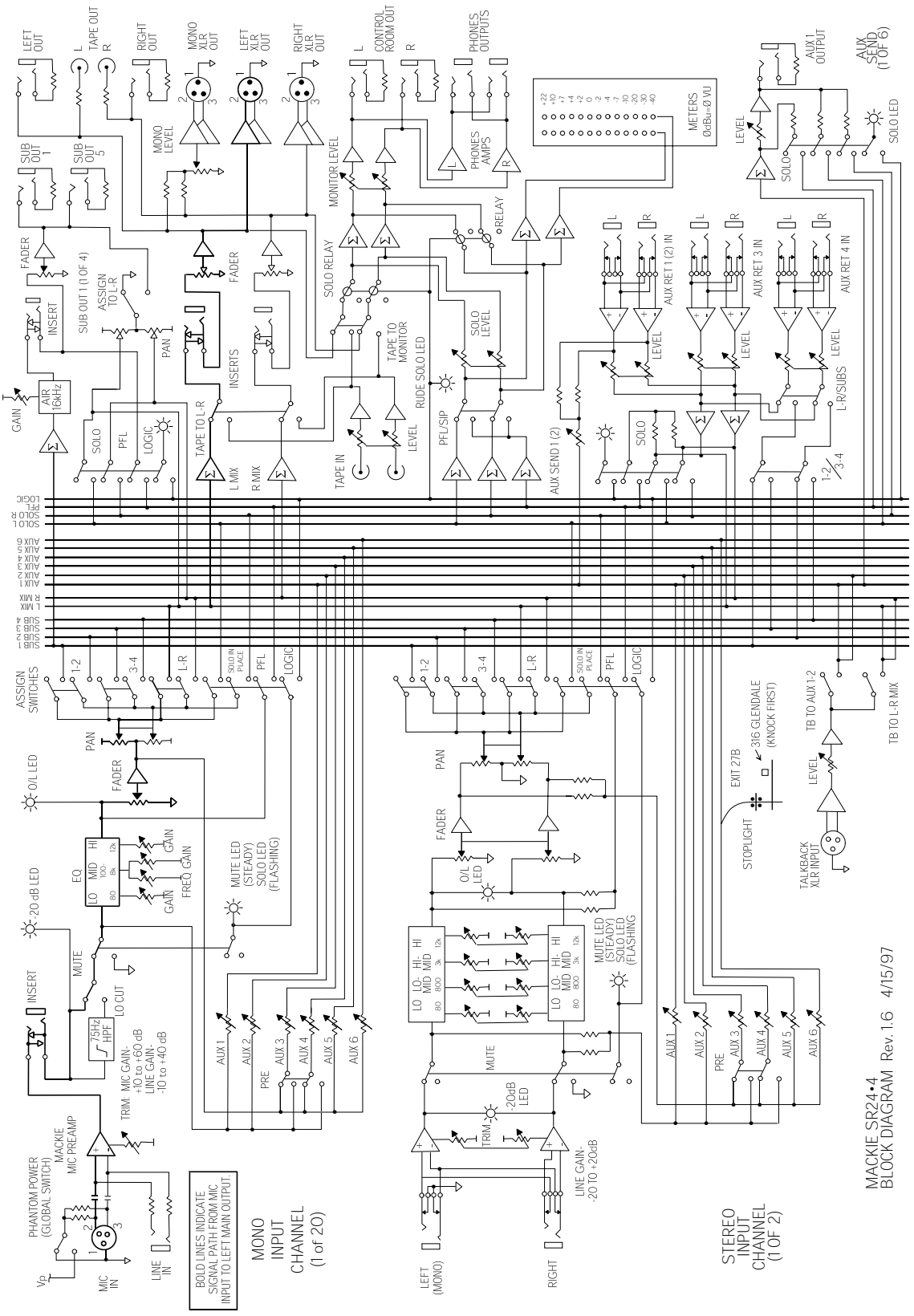
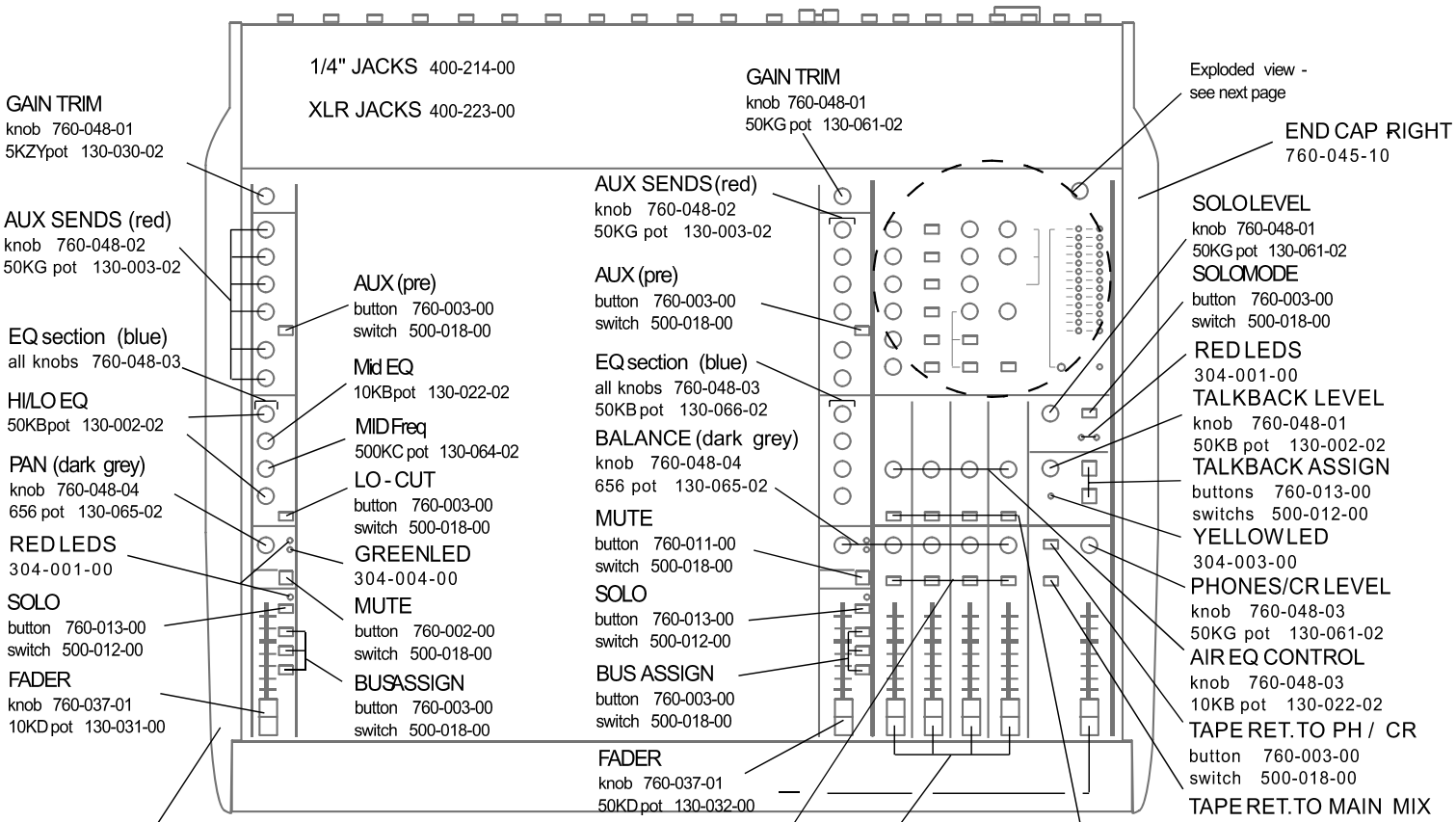
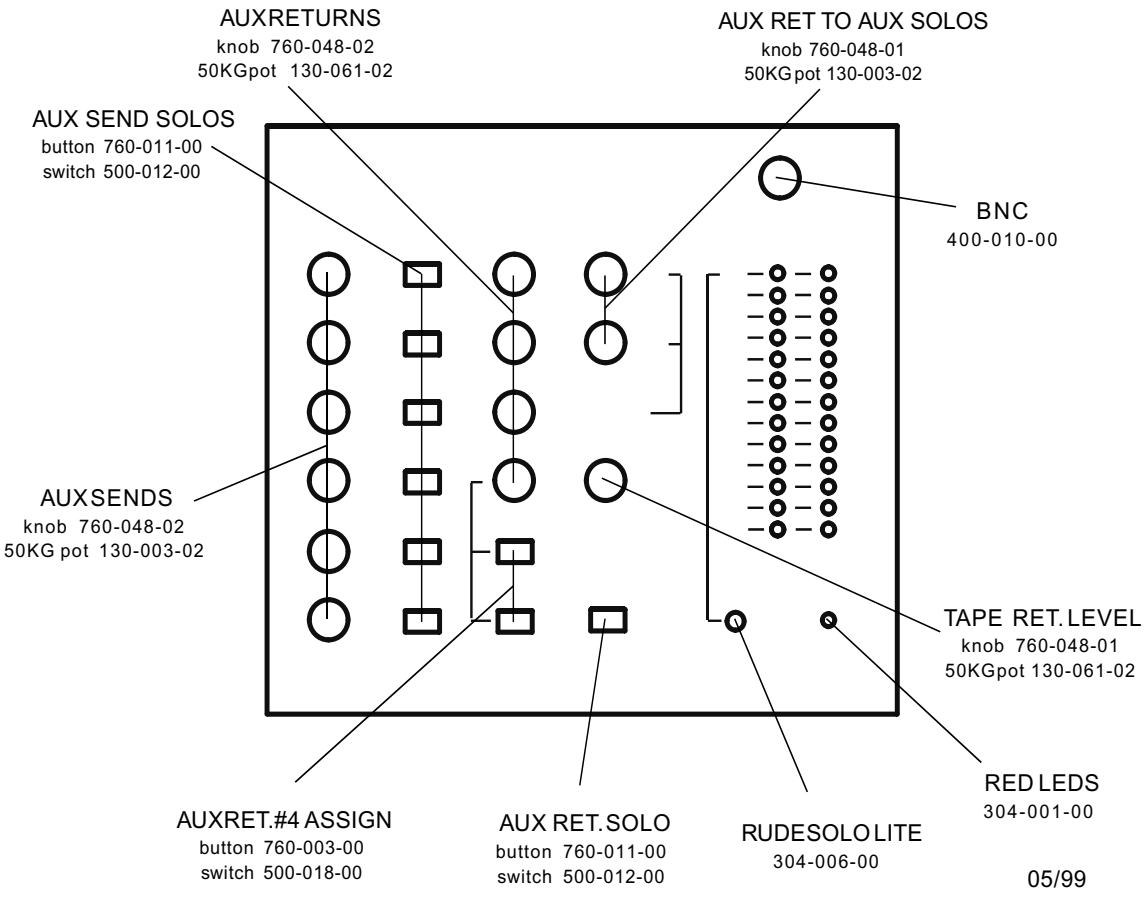

MACKIE SR24•4
BLOCK DIAGRAM Rev. 1.6 4/15/97
MONO INPUT CHANNEL (1 of 20)
STEREO INPUT CHANNEL (1 OF 2)
BOLD LINES INDICATE SIGNAL PATH FROM MIC INPUT TO LEFT MAIN OUTPUT
LEFT OUT
TAPE OUT
RIGHT OUT
MONO XLR OUT
LEFT XLR OUT
RIGHT XLR OUT
CONTROL ROOM OUT
PHONES OUTPUTS
METERS ØdBu=Ø VU
AUX1 OUTPUT
AUX SEND (1 OF 6)
SUB OUT 1
SUB OUT 5
MONO LEVEL
MONITOR LEVEL
PHONES AMPS
SOLO RELAY
TAPE TO MONITOR
SOLO LEVEL
RUDE SOLO LED
PFL/SIP
AUX SEND 1 (2)
AUX RET 1 (2) IN
AUX RET 3 IN
AUX RET 4 IN
L-R/SUBS
FADER
INSERT
SUB OUT 1 (1 OF 4)
ASSIGN TO L-R
PAN
INSERTS
GAIN
AIR 16kHz
SOLO
PFL
LOGIC
TAPE TO L-R
L MIX
R MIX
TAPE IN
LEVEL
ASSIGN SWITCHES
1-2
3-4
L-R
SOLO IN PLACE
O/L LED
EQ
HI
MID
LO
FREQ
GAIN
MUTE LED (STEADY) SOLO LED (FLASHING)
-20 dB LED
MUTE
LO CUT
75Hz HPF
TRIM: MIC GAIN- +10 to +60 dB LINE GAIN- -10 to +40 dB
MACKIE MIC PREAMP
PHANTOM POWER (GLOBAL SWITCH)
MIC IN
LINE IN
AUX 1
AUX 2
PRE
AUX 3
AUX 4
AUX 5
AUX 6
20dB LED
LINE GAIN- -20 TO +20dB
LEFT (MONO)
RIGHT
TB TO AUX 1-2
TB TO L-R MIX
TALKBACK XLR INPUT
STOPLIGHT
EXIT 27B
316 GLENDALE (KNOCK FIRST)

QUICK PARTS



05/99

QUICK PARTS


AUX RETURNS
knob 760-048-02
50KG pot 130-061-02
AUX RET TO AUX SOLOS
knob 760-048-01
50KG pot 130-003-02
AUX SEND SOLOS
button 760-011-00
switch 500-012-00
BNC
400-010-00
AUX SENDS
knob 760-048-02
50KG pot 130-003-02
TAPE RET. LEVEL
knob 760-048-01
50KG pot 130-061-02
RED LEDS
304-001-00
AUX RET. #4 ASSIGN
button 760-003-00
switch 500-018-00
AUX RET. SOLO
button 760-011-00
switch 500-012-00
RUDE SOLO LITE
304-006-00
05/99

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THE MIXER FIXER • MACKIE DESIGNS

SR-24•4 CHANNEL PREAMP MALFUNCTIONS

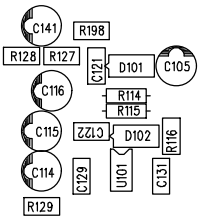
Model: Early SR-24•4's, Serial #s T10000 - T11000

Symptom: Blown 4401 SMT transistor(s) in Mic/line preamplifier causing channel(s) to be dead, noisy, or lacking gain. Channel functions normally from insert point on.

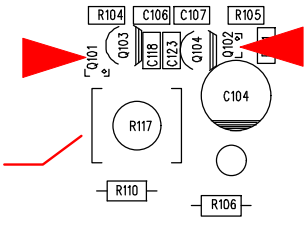
Cause: 4401 transistors are not able to withstand the voltage transient created if mic input is shorted to ground while the phantom power is on.

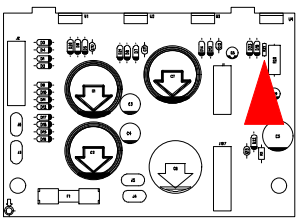
Solution: Replace blown 4401 transistor(s) with MPSA06 transistor(s). To prevent reoccurrence either a) Replace all 4401's with MPSA06's or b) Lower phantom voltage by changing R21 on the power supply PCB from 180 ohm to 220 ohm.

Notes: Lowering the phantom voltage will not affect the performance of most condenser microphones.



Location of SMT 4401 transistors.
Channel 1 shown.





Location of R21.

Power supply PCB.

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SR-24•4 AUX SEND HUM

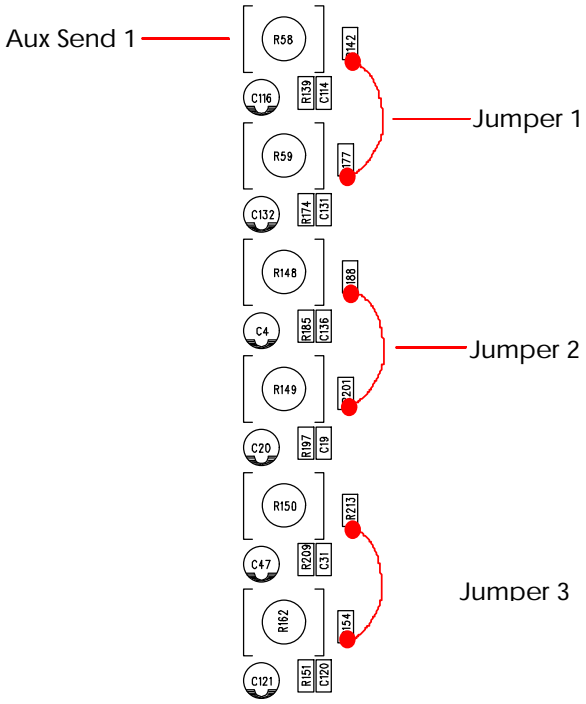
Model: Early SR-24•4's, Serial #s T10000 - T11000

Symptom: AC hum/buzz on aux sends 2,4, and 6.

Cause: Inadequate grounding on even numbered aux sends.

Solution: Add ground jumpers to the component side of the master PCB as illustrated below.

Notes: When reassembling, route the wires attached to the BNC jack as far from the Master PCB as possible.



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THE MIXER FIXER • MACKIE DESIGNS

SR-24•4 AUX SEND HUM

Model: Early SR-24•4's, Serial #s T10000 - T11000

Symptom: AC hum/buzz on aux sends 2,4, and 6.

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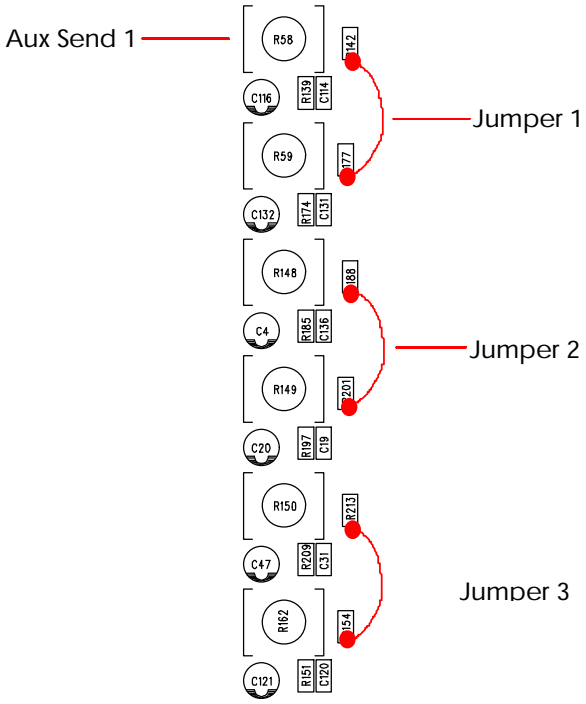

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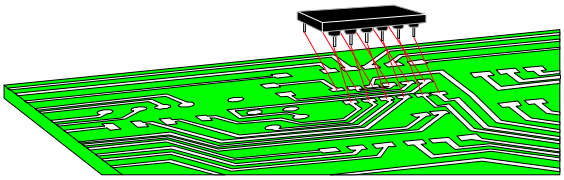


THE MIXER FIXER • MACKIE DESIGNS

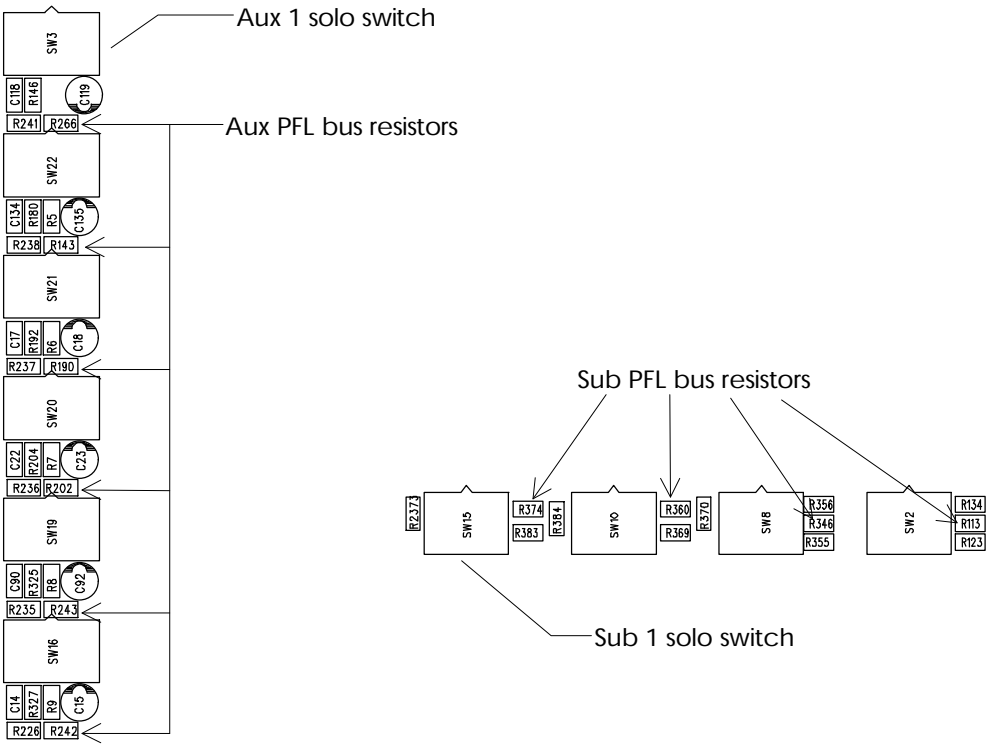
SR-24•4 PFL SOLO LEVEL DISCREPANCY

Model: Early SR-24•4's, Serial #s T10000 - T12500

Symptom: Sub PFL level 6dB below actual output, Aux Send PFL level 6dB above actual output.

Cause: Improper gain structure due to incorrect bus resistors.

Solution: To correct Sub PFL level, change R374, 360, 346, and 113 from 10K to 5K1. To correct Aux Send PFL level, change R266, 143, 190, 202, 243, and 242 from 5K1 to 10K.



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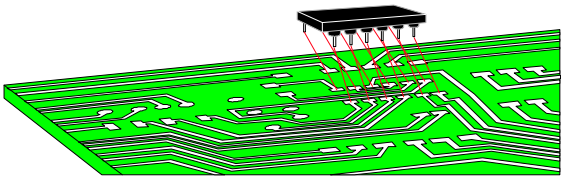

THE MIXER FIXER • MACKIE DESIGNS

SR-24•4 PHONES/C-R LEVEL REVISION

Model: SR-24•4

Effective: Serial numbers above T11400

Revision: Gain stage following the Phones/C-R Level pot has been changed from +15dB gain to unity gain by changing R222 and R245 from 36k to 6K8. In conjunction, the headphone driver gain has been increased by changing R267 and R393 from 3K6 to 2K.

Reason: Extra gain on Control Room output deemed unnecessary.

Notes: There is no need to rework units built prior to this revision unless an end user who owns both revised and unrevised SR-24•4's notices the discrepancy, or the unit is being used in an application where the extra 15dB gain on the Control Room outputs is undesirable.

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THE MIXER FIXER • MACKIE DESIGNS SERVICE NEWS

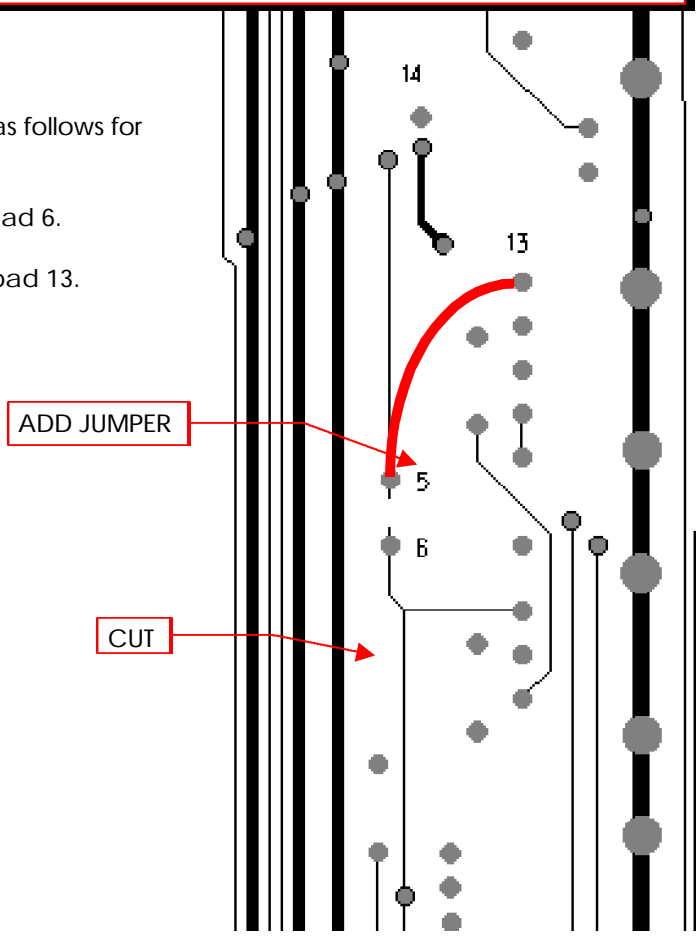
SR24 •4, SR32 •4
AUX 1, 2, 3, 4 TO POST EQ, PRE FADE MODIFICATION

IMPORTANT:
The instructions for this modification as published on p. 61 of the owner's manual version 1.1-6/95 are incorrect for SR24 •4s with ser# above T12971 and SR32 •4s ser# above Z10000.

The modification should be performed as follows for each mono channel:

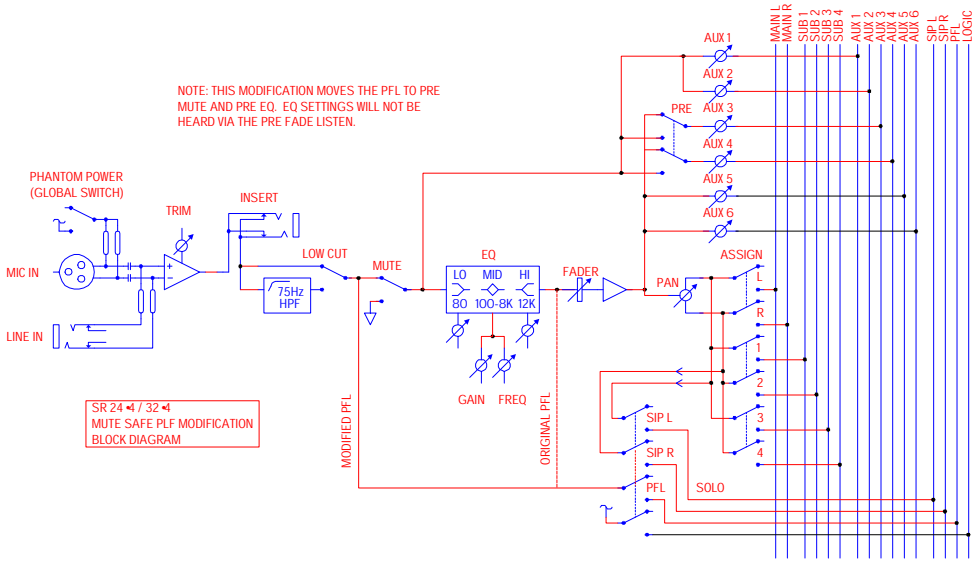
1. Cut the trace between pad 5 and pad 6.

2. Add a jumper between pad 5 and pad 13.



SR24•4 / SR32•4
MUTE SAFE PFL MODIFICATION

This modification allows a user to monitor muted channel(s) via PFL. It moves the Pre Fade Listen solo tap point to pre mute (pre EQ) and modifies the solo control logic so that a muted channel can be soloed.



The modification can be performed from the back of the PCB for all channels except for the last mono channel (20 on the 24•4, 28 on the 32•4). On the last mono channel one of the traces that must be cut is run on the component side of the PCB. The options for modifying the last mono channel are:

1. Don't do it. Use it for something that the stock PFL will work for such as an effects return.

2. Remove the PCB to access the trace (time consuming, but safe).

3. ! EXPERTS ONLY ! Drill through the PCB just enough to cut the trace, and not damage the switch. This trace connects the points at which the 1N4148 gets attached, a successful cut will break continuity.

UL Warning

Caution! These modification instructions are for use by qualified personnel only. To avoid electric shock , do not remove the back panel, no user serviceable parts inside. Refer all servicing and modification to qualified personnel.

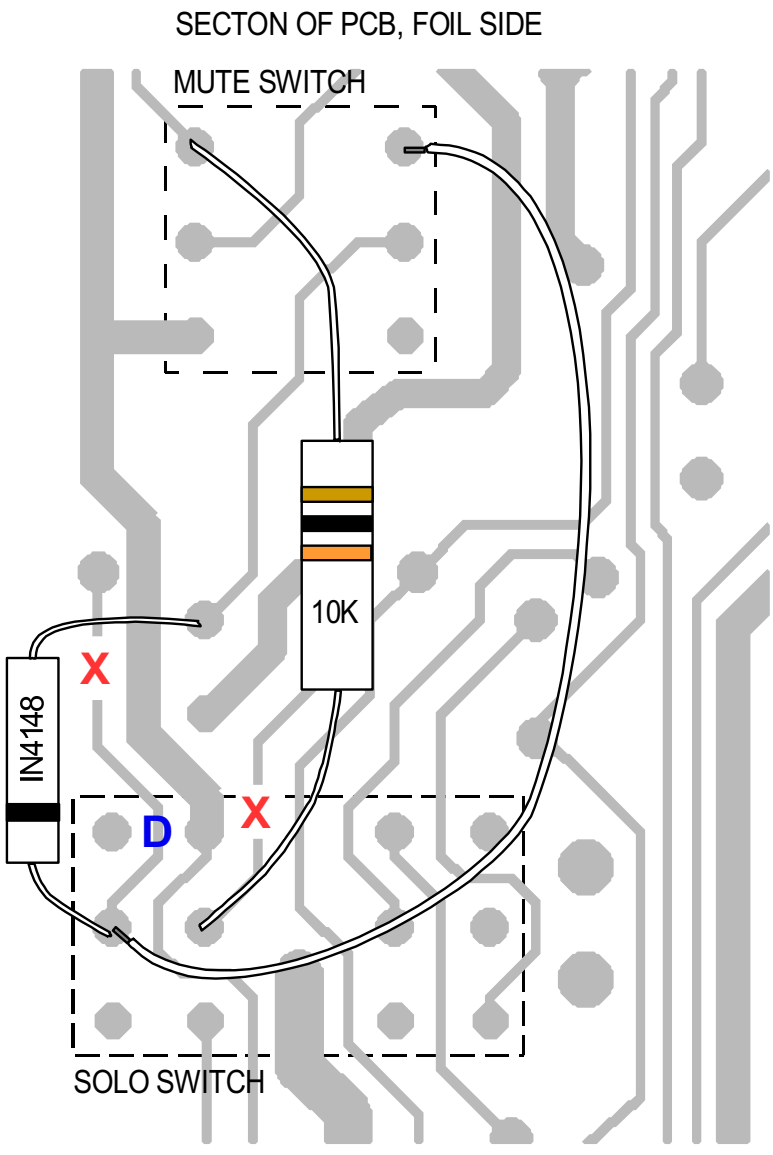
Mackie Disclaimer

Any modification of any Mackie Designs Product must be performed by a competent electronic technician. Mackie Designs accepts no responsibility for any damages or injuries caused by any modification, regardless of the source of the modification instructions or the qualifications of the technician performing them. In the case of such damages Mackie Designs may declare warranty privileges void.

Important

Mackie Designs has "published" modifications which we will support over the phone. This is NOT one of them. The information provided herein is more than adequate for a qualified electronic technician to perform the modification.

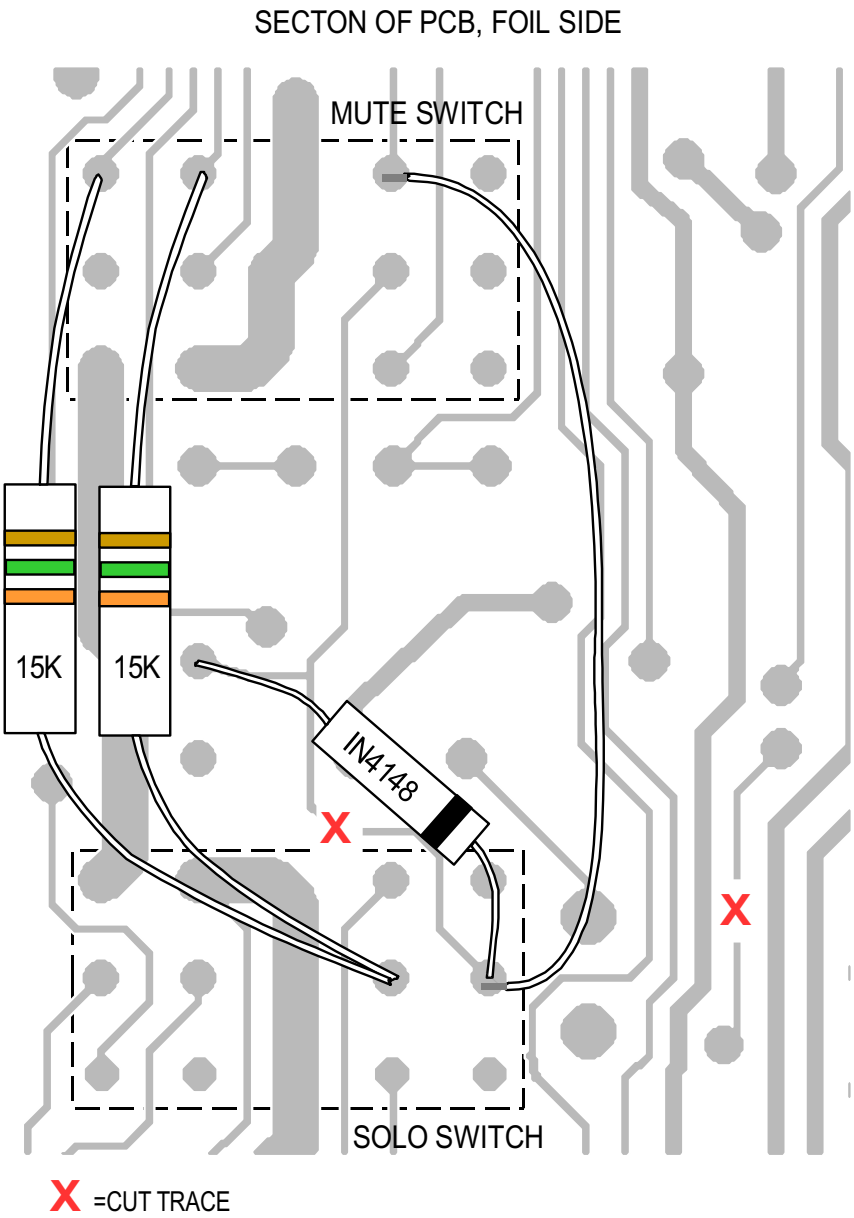
SR24•4 / SR32•4 MUTE SAFE PFL **MODIFICATION, MONO CHANNELS**

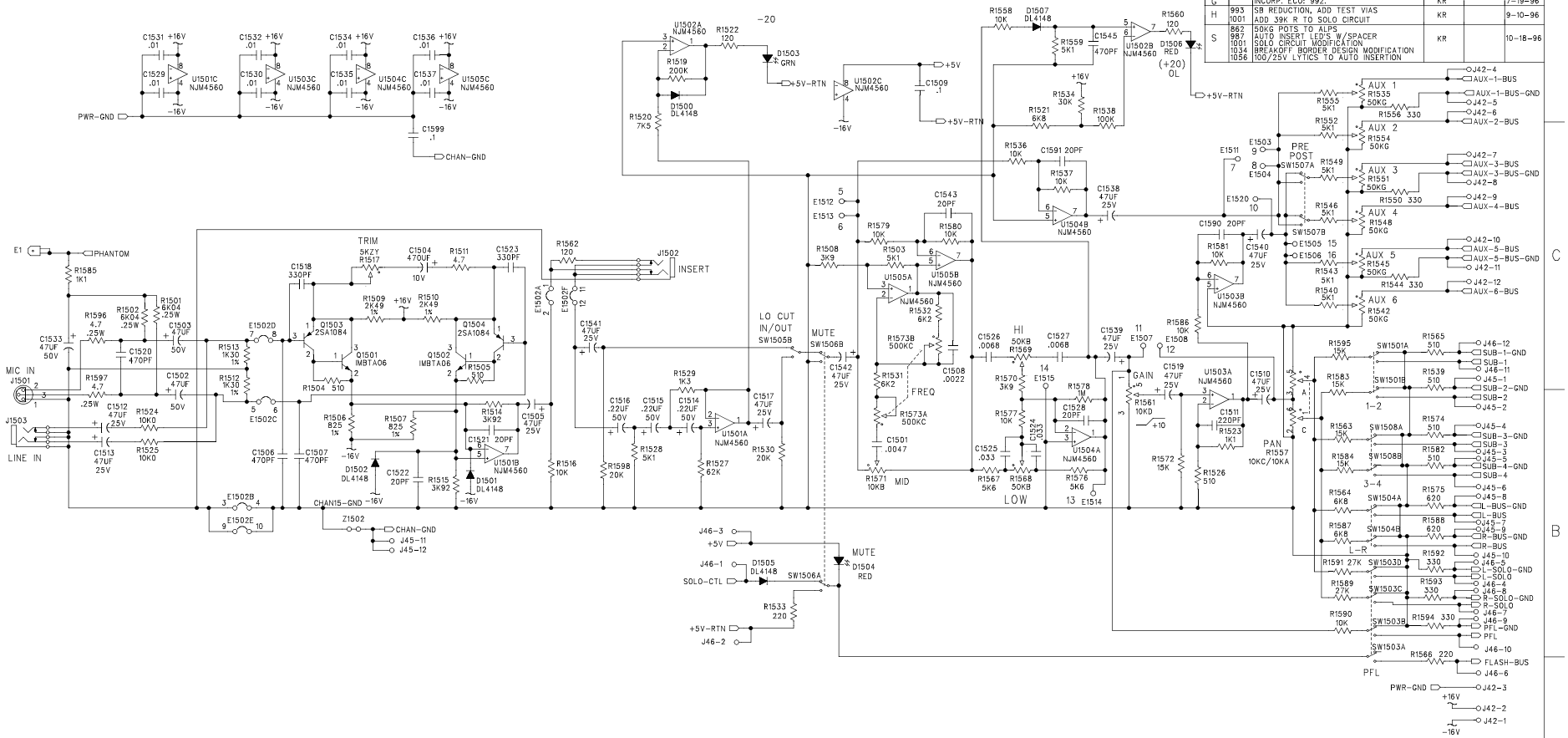


X =CUT TRACE

D =DRILL POINT, LAST MONO CHANNEL ONLY!

SR24•4 / SR32•4 MUTE SAFE PFL MODIFICATION, STEREO **CHANNELS**





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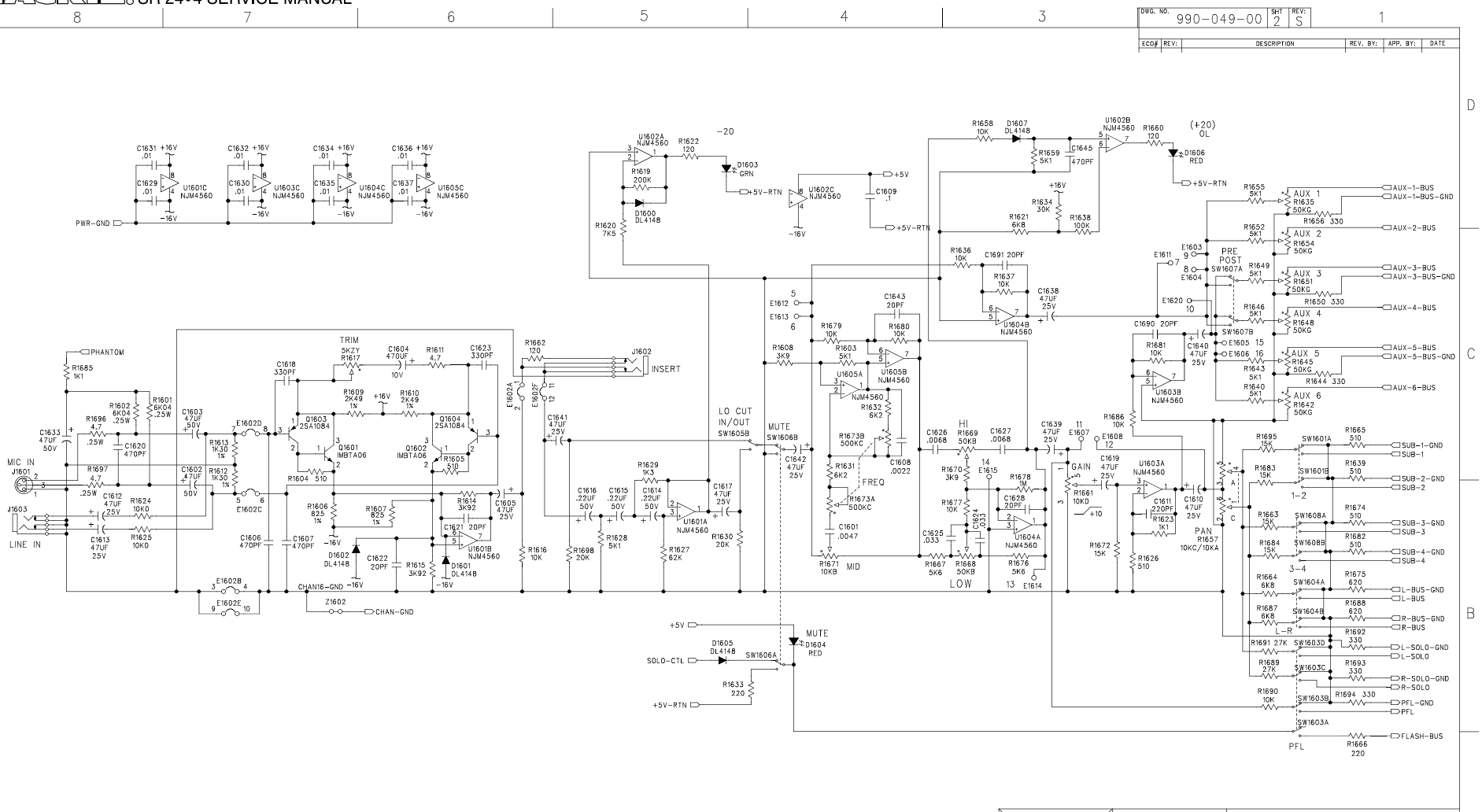

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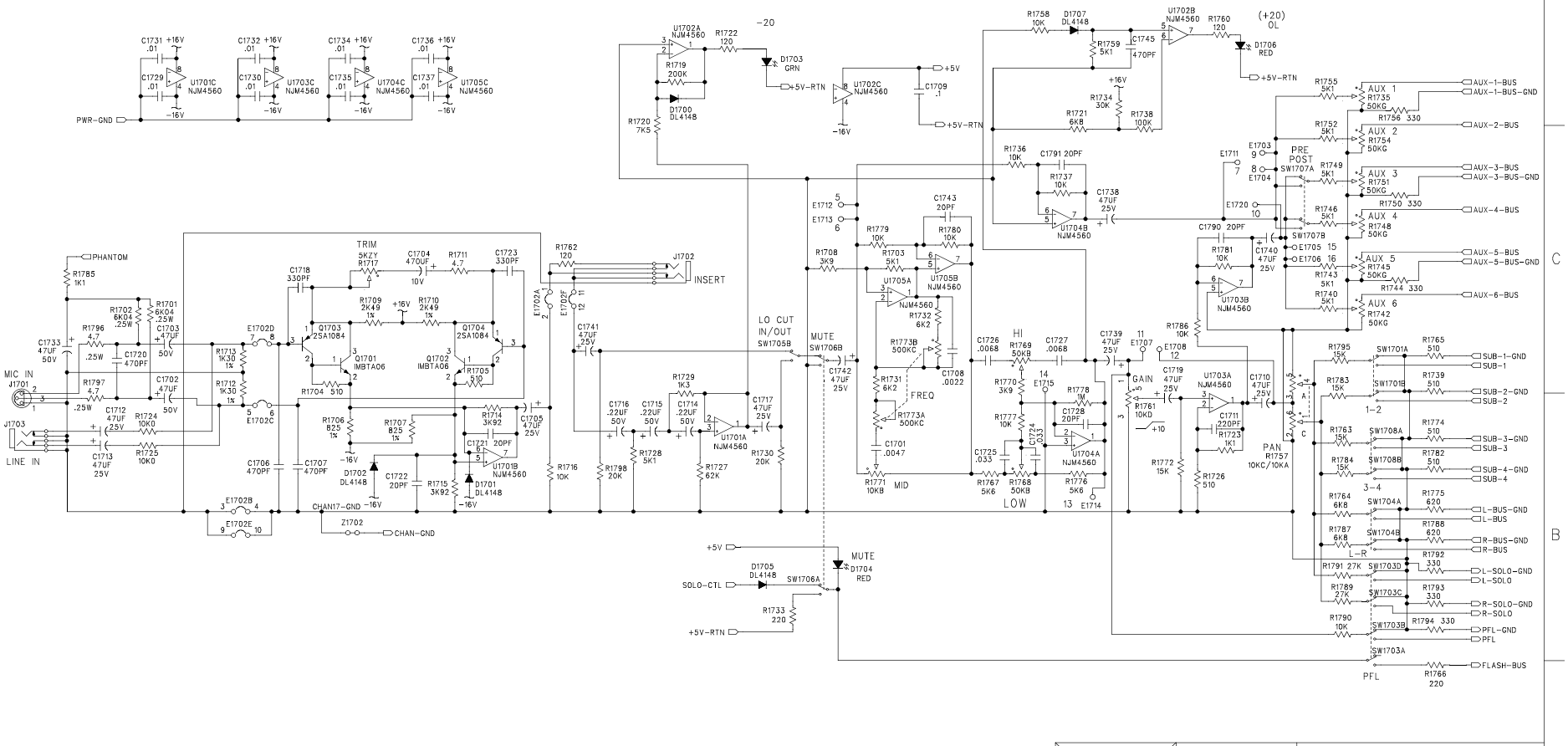

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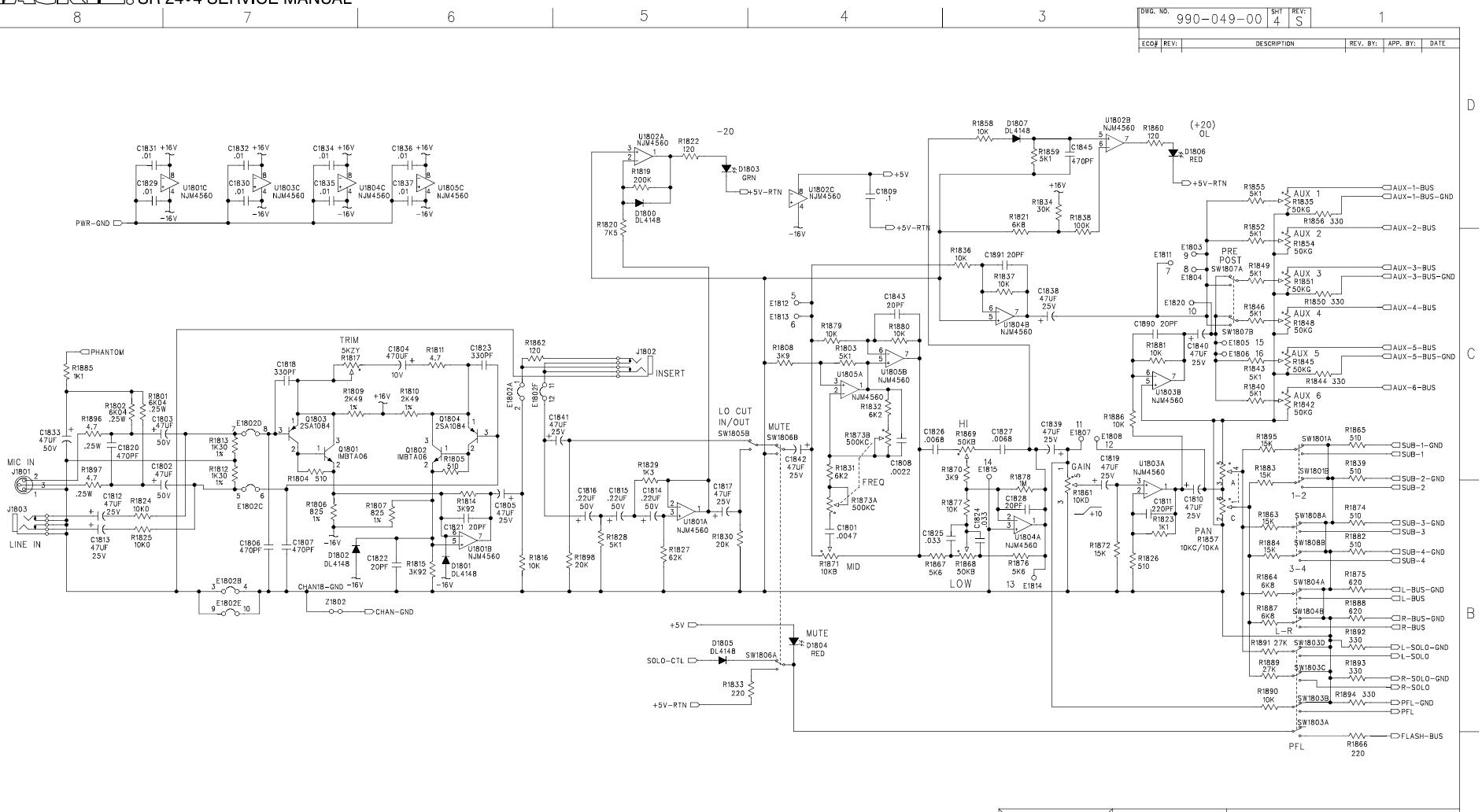

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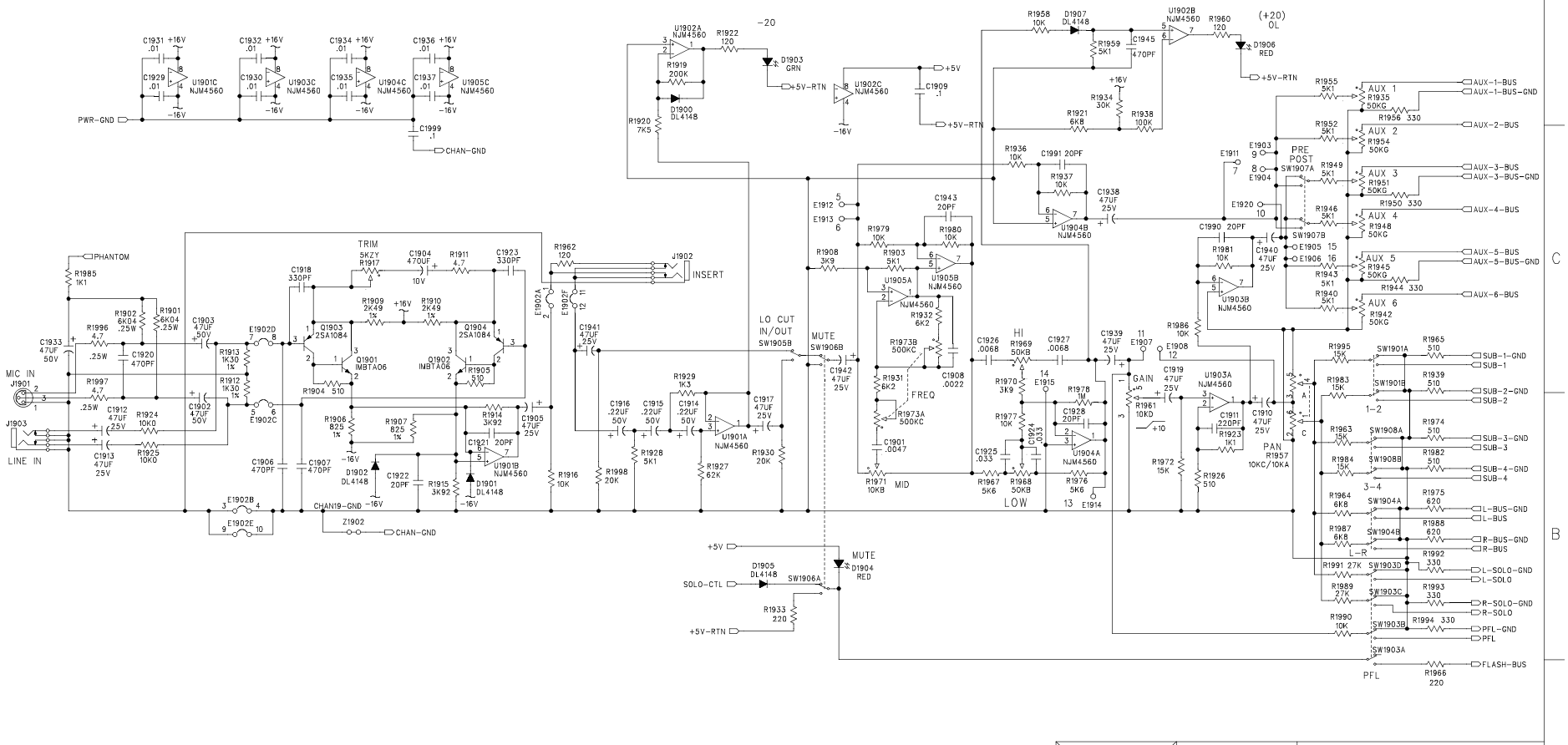

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS: DECIMALS: ANGLES:
±NA .XX ±.01 ±NA
.XXX ±.005
MATERIAL: SEE NOTES
FINISH: SEE NOTES
DO NOT SCALE DRAWING

CONTRACT NO:

APPROVALS	DATE
DRAWN: trh	4-22-95
CHECKED:	
ISSUED:	
ENG:	
MFG:	

MACKIE.
Mackie Designs Inc. Woodinville, Wa.

SCHEMATIC,
MASTER BOARD, 24•4

SIZE D | DWG. NO. 990-049-00 | REV. S
SCALE: NONE | SHEET 5 OF 13

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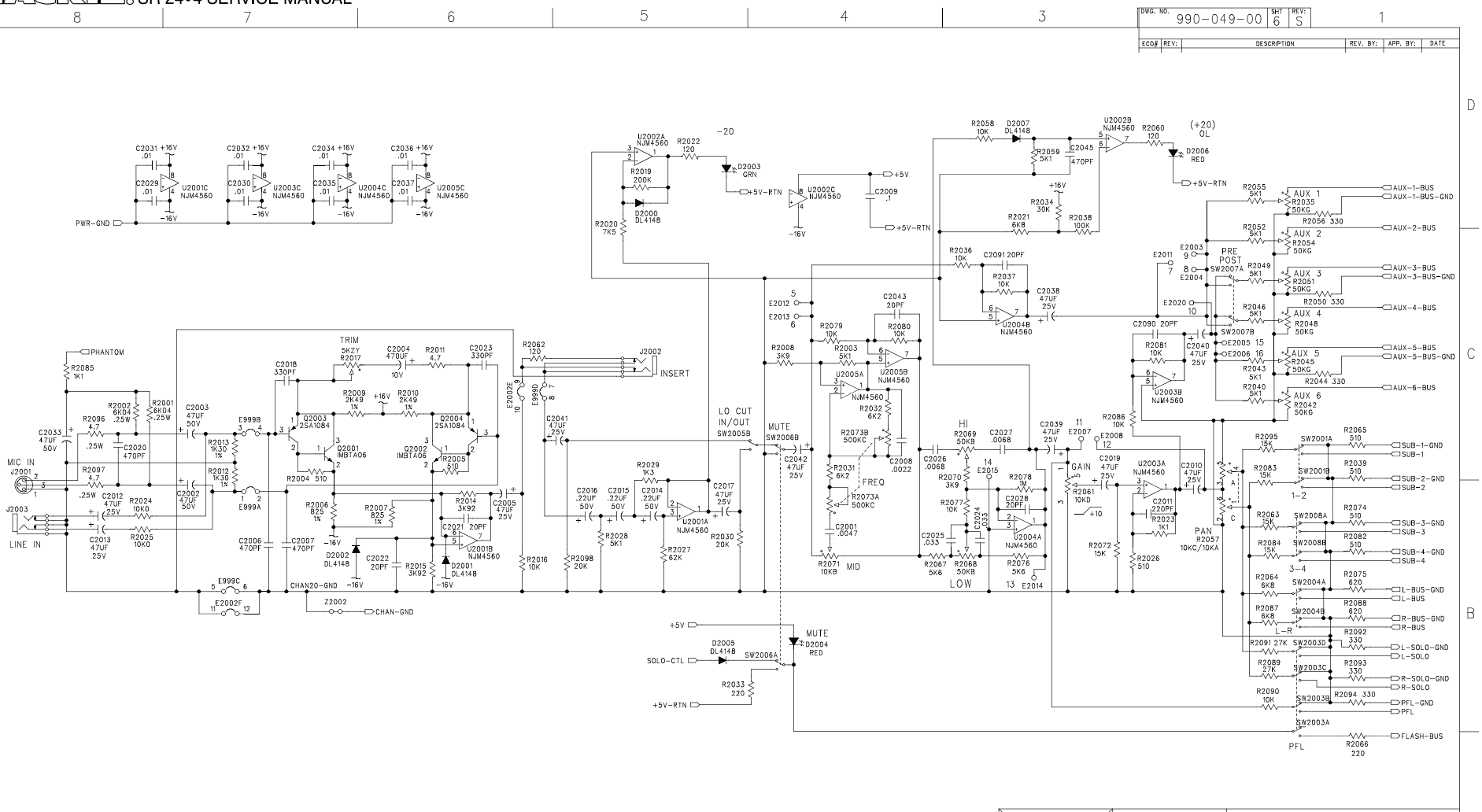

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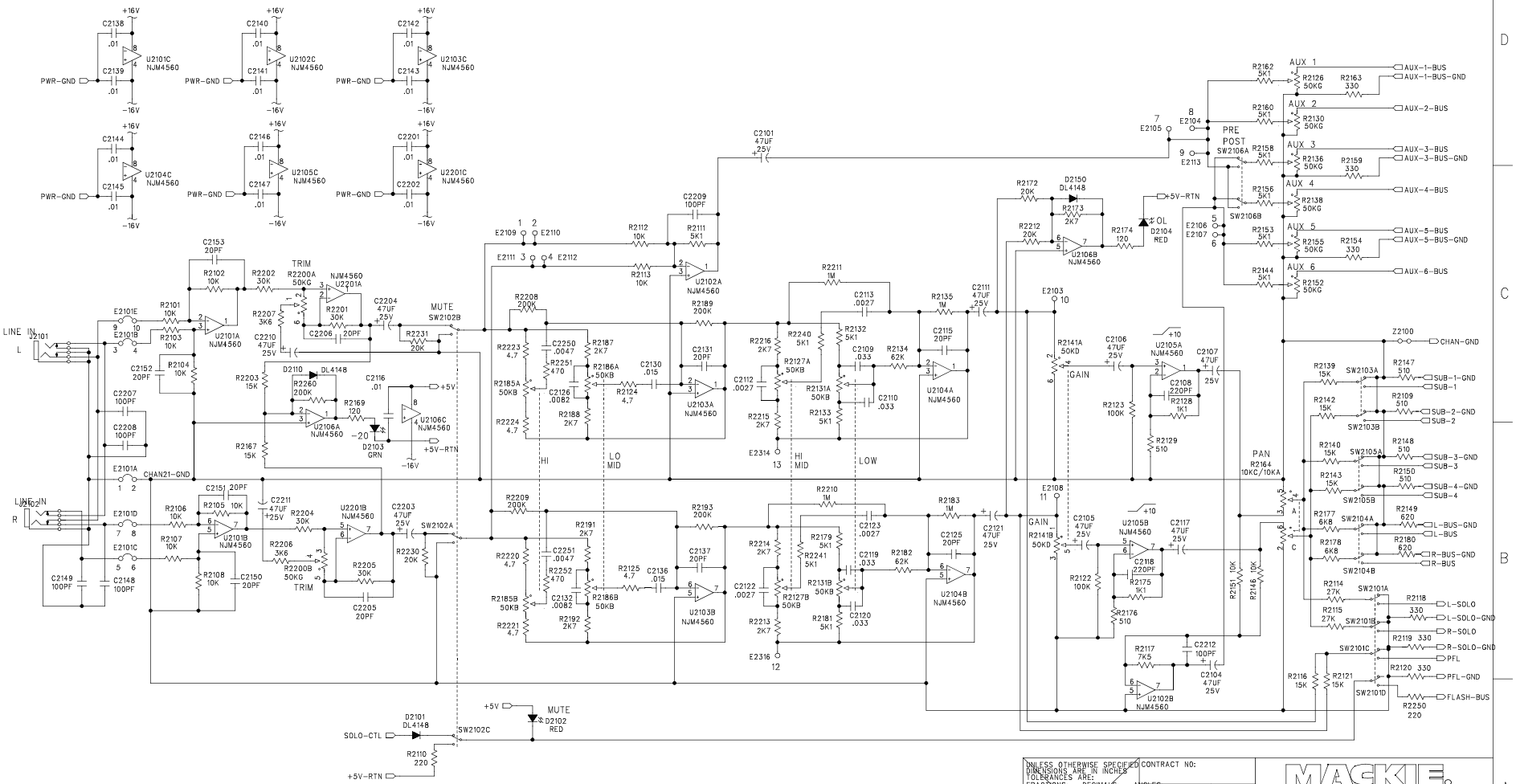

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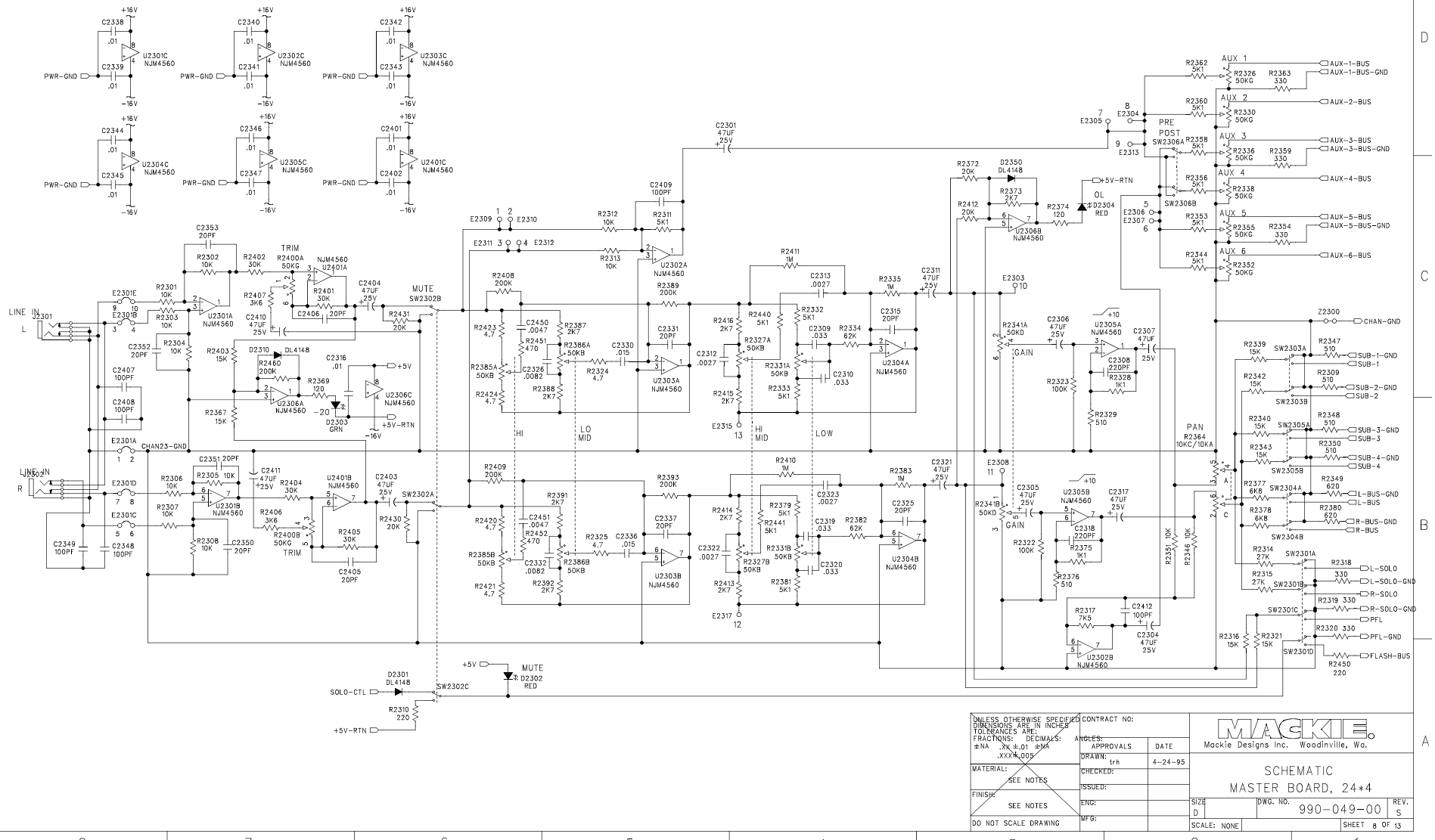

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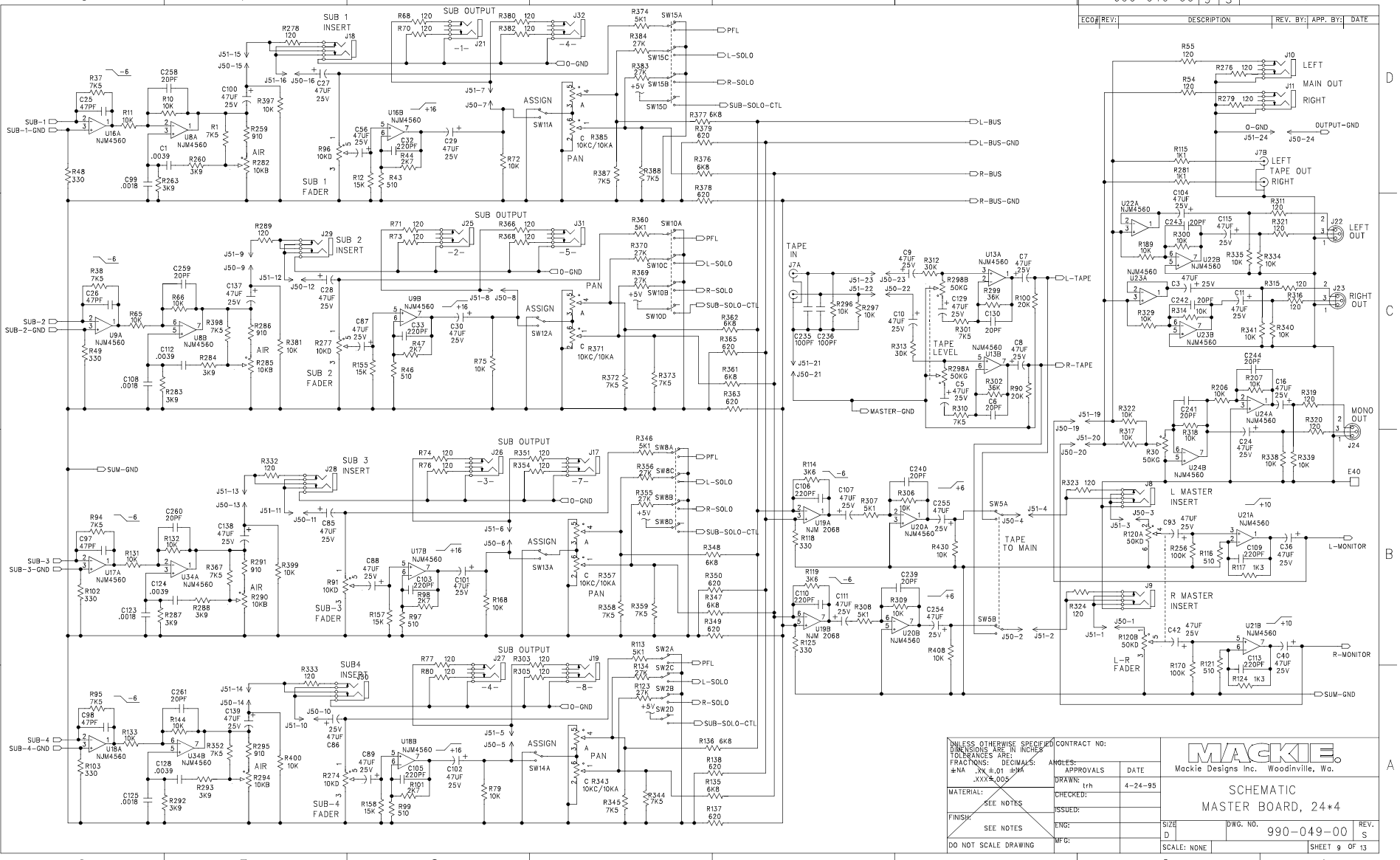

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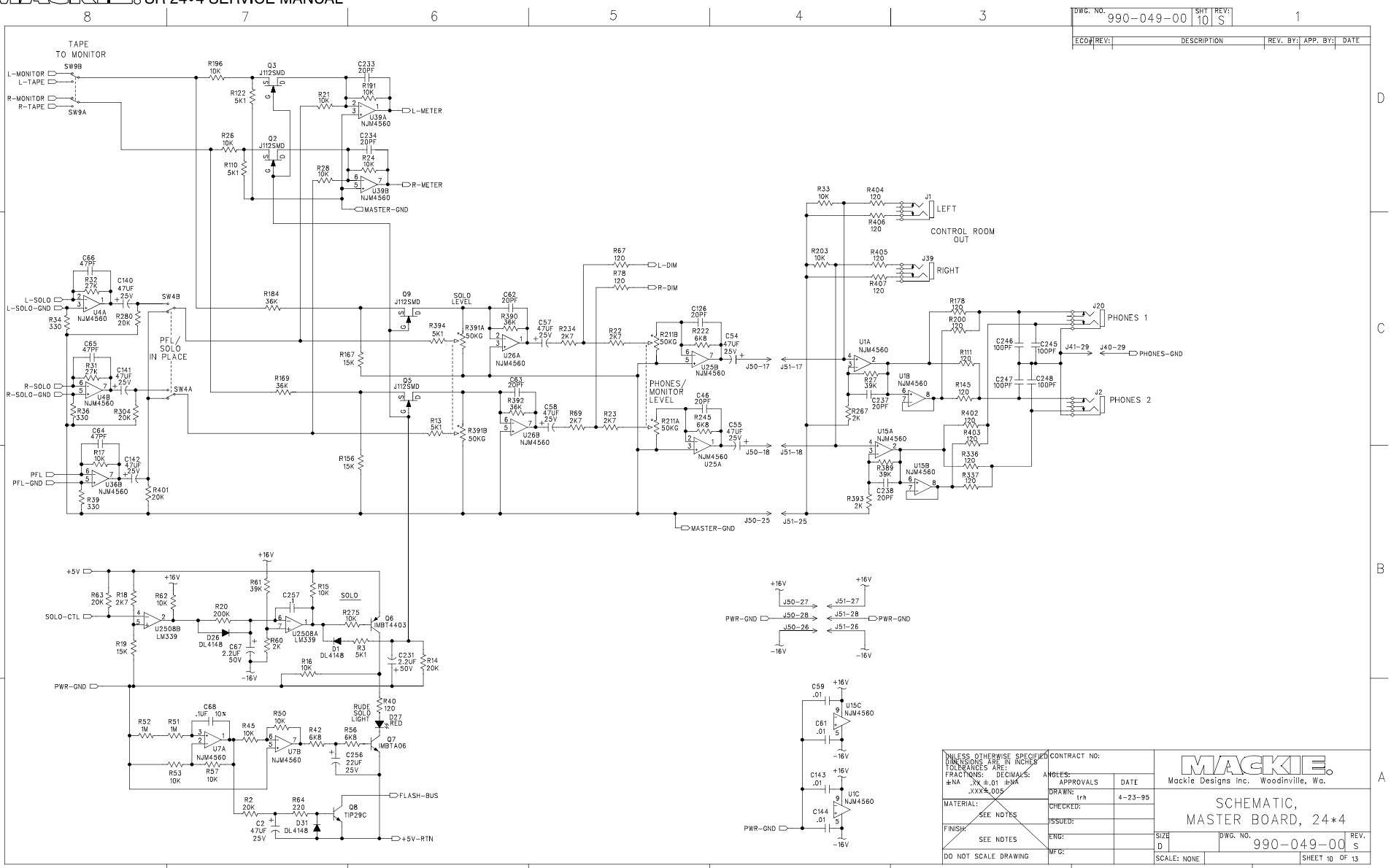

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ECO#	REV:	DESCRIPTION	REV. BY:	APP. BY:	DATE

UNLESS OTHERWISE SPECIFIED
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TOLERANCES ARE:
FRACTIONS: DECIMALS: ANGLES:
±NA .XX ±.01 ±NA
.XXX ±.005

MATERIAL: SEE NOTES

FINISH: SEE NOTES

DO NOT SCALE DRAWING

CONTRACT NO:

APPROVALS	DATE
DRAWN: trh	4-23-95
CHECKED:	
ISSUED:	
ENG:	
MFG:	

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Mackie Designs Inc. Woodinville, Wa.

SCHEMATIC,
MASTER BOARD, 24*4

SIZE	DWG. NO.	REV.
D	990-049-00	S

SCALE: NONE SHEET 10 OF 13

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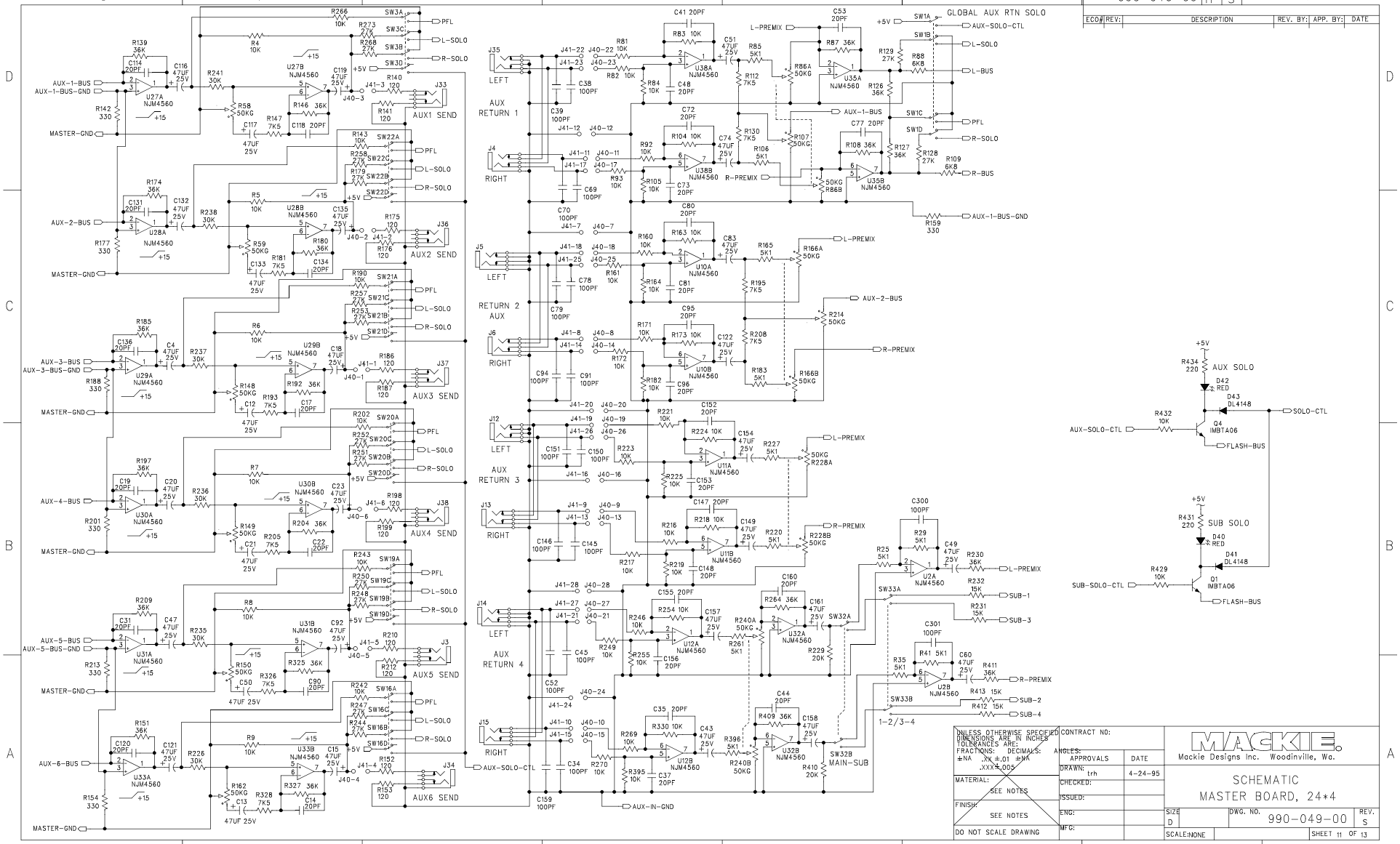

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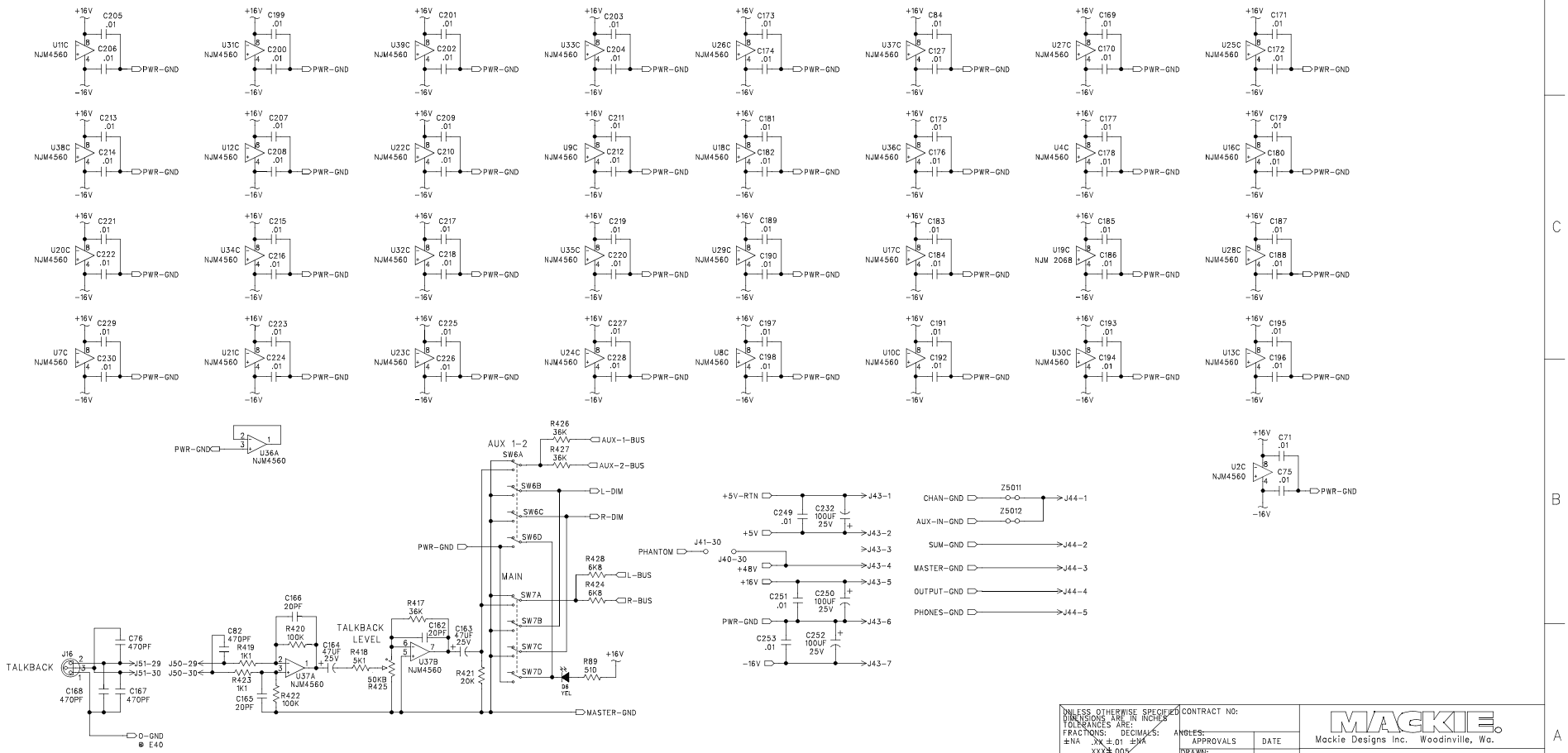

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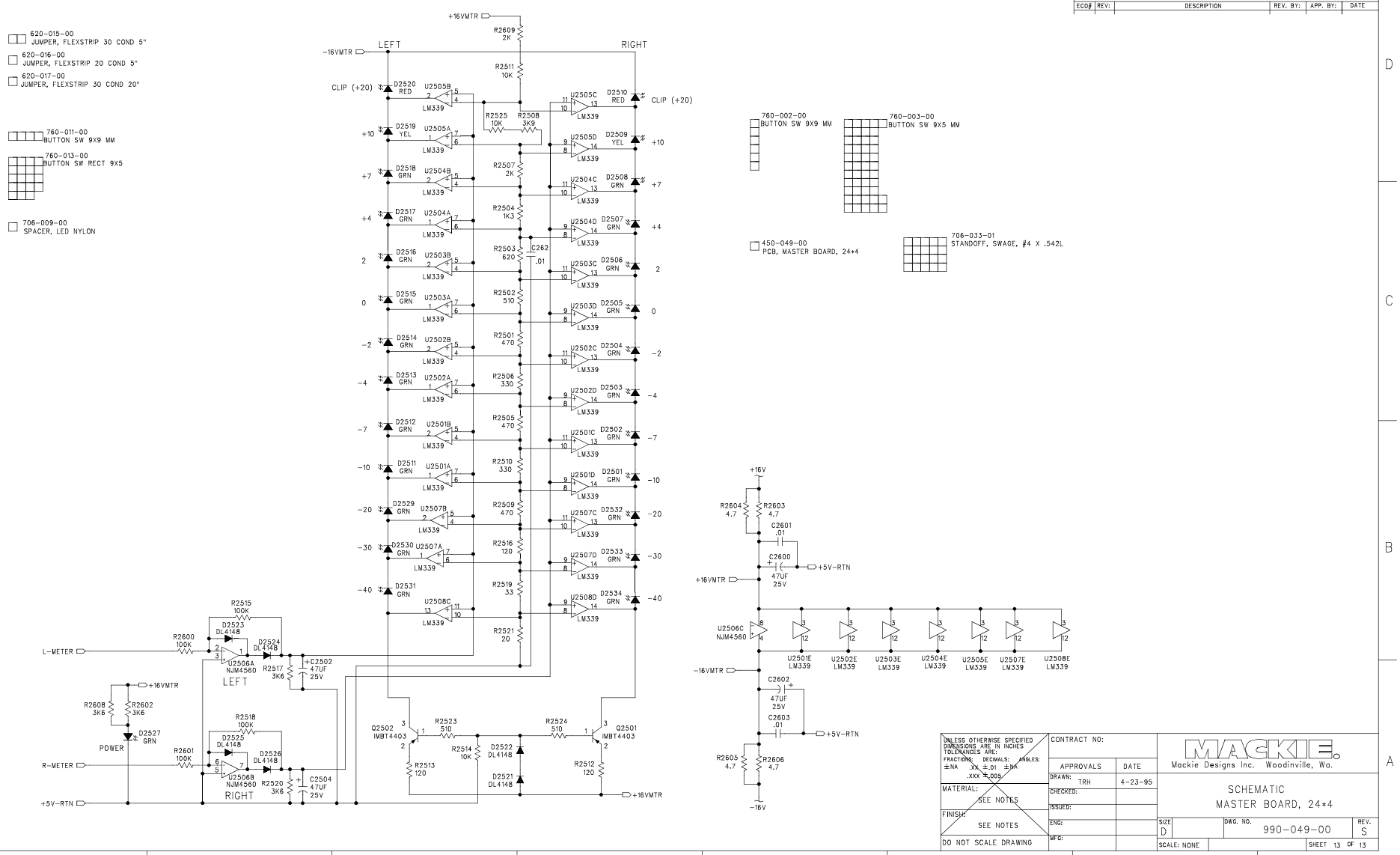

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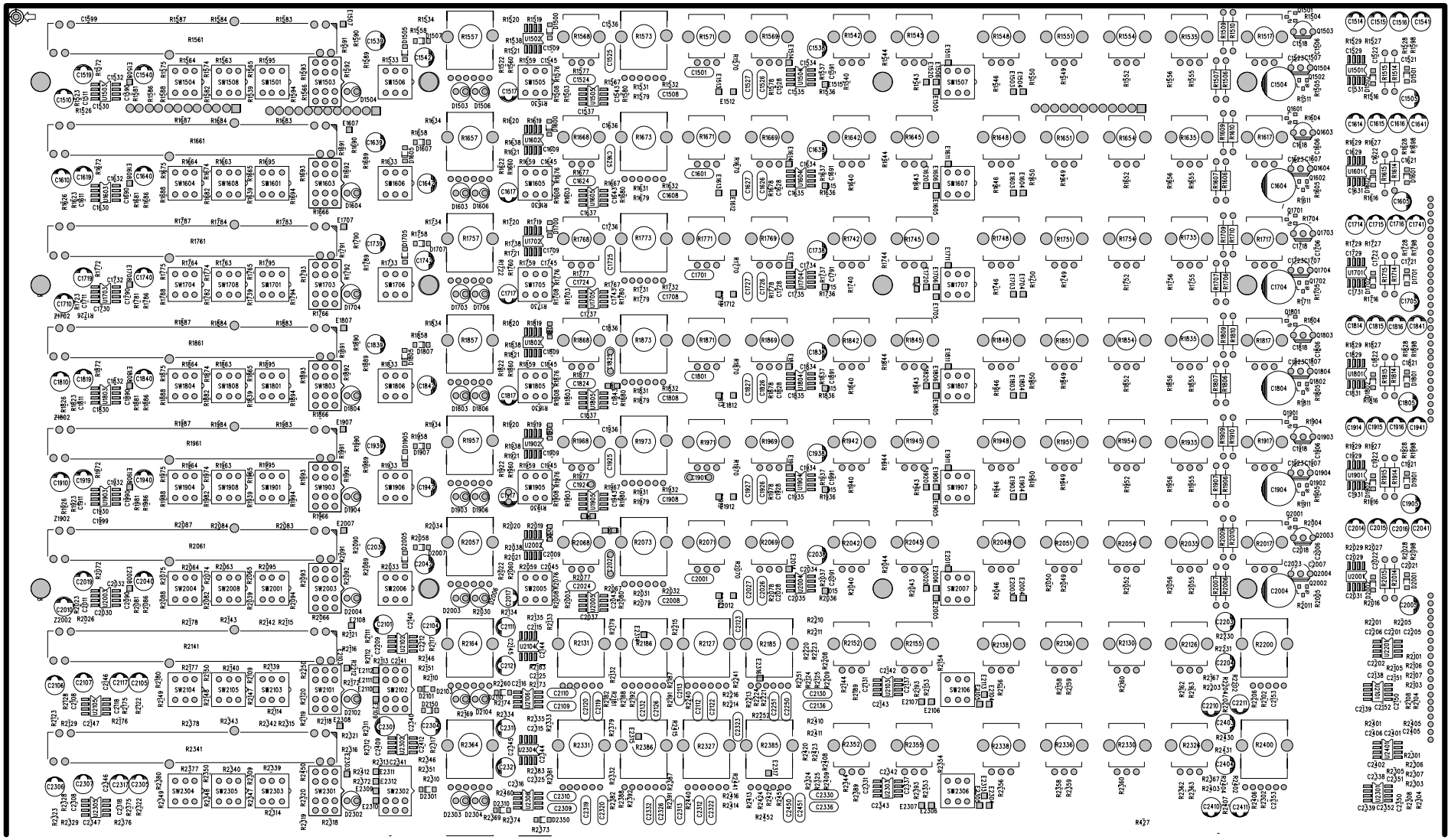

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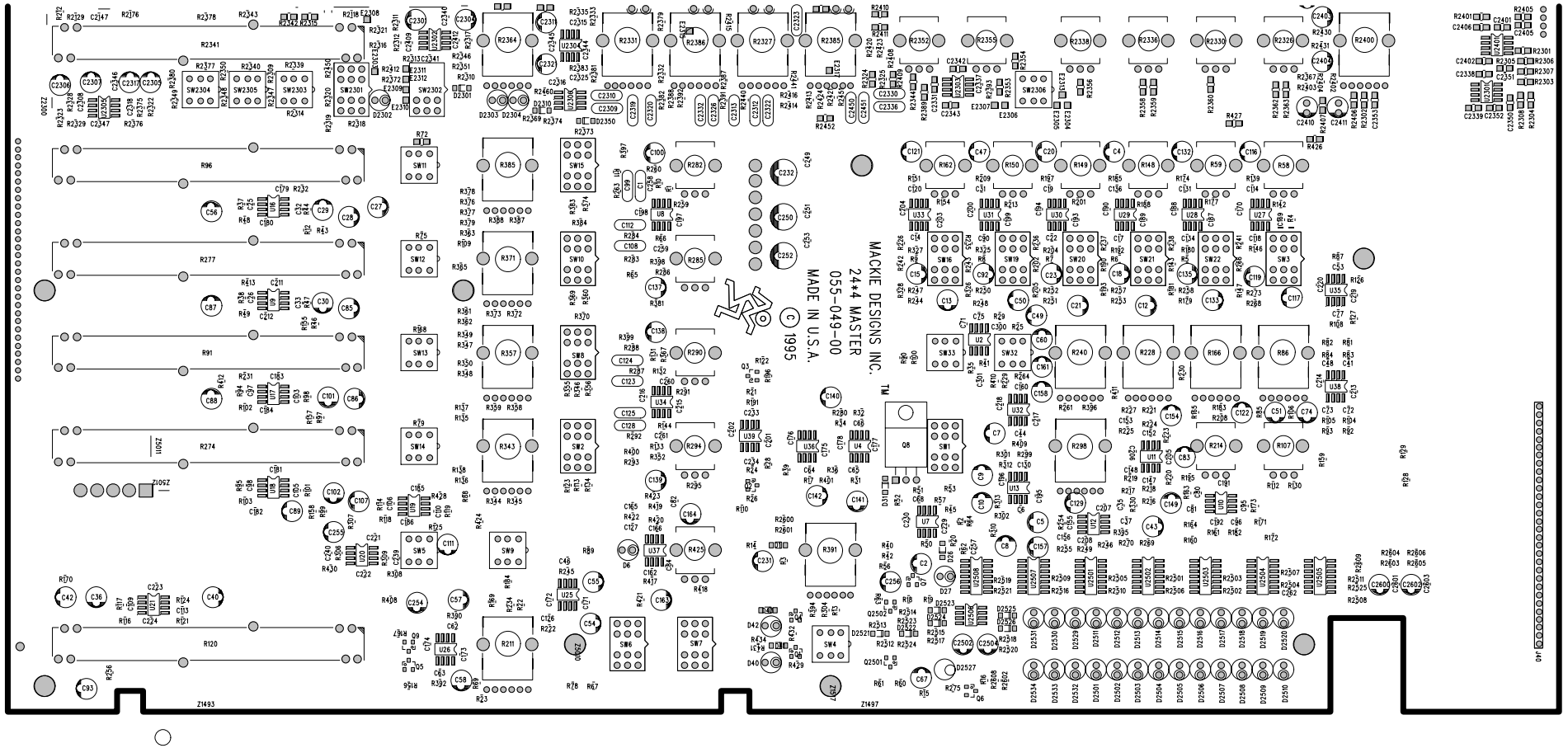

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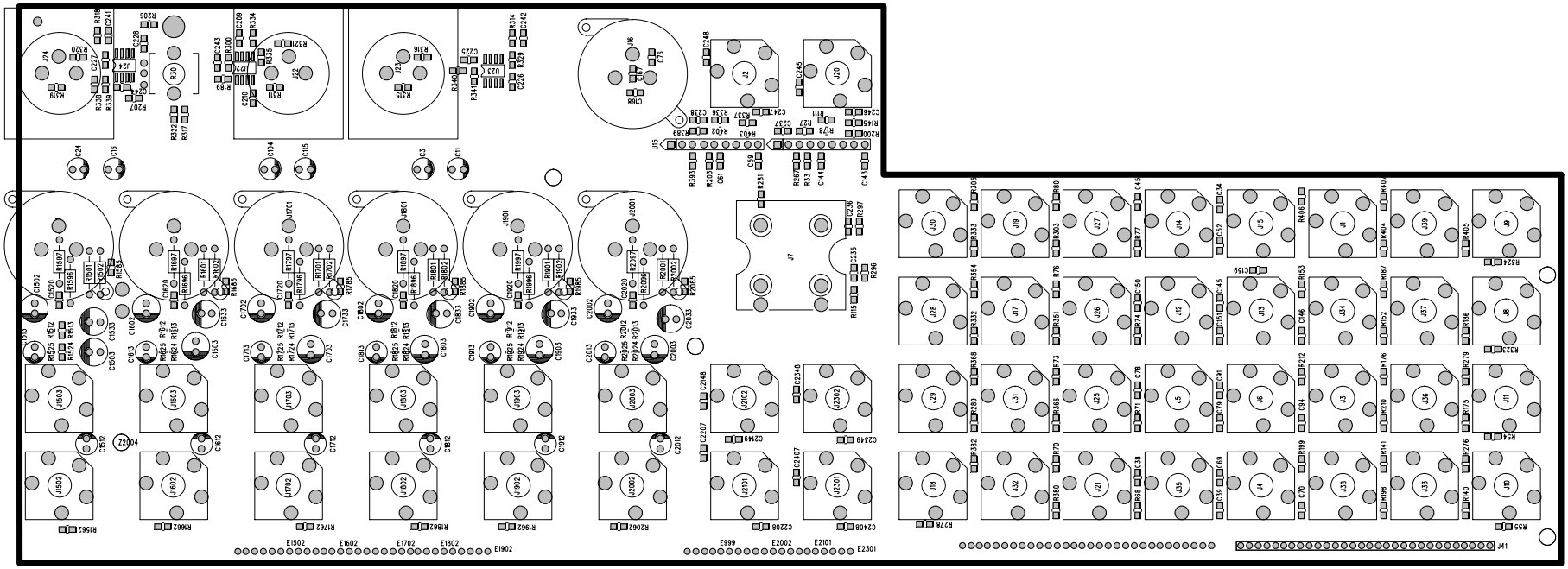

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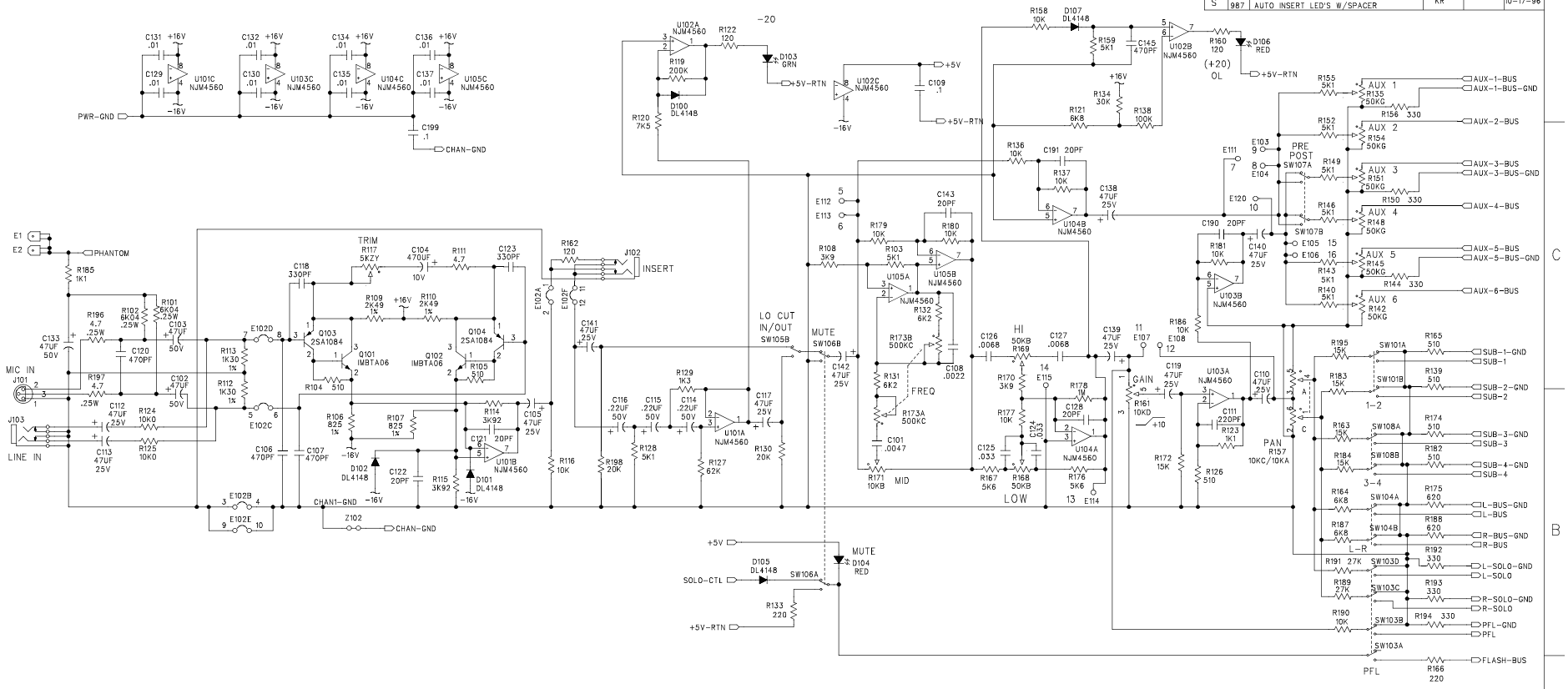
DWG. NO.	SHT	REV:
990-050-00	1	S

REV:	ECO#	DESCRIPTION	REV. BY:	APP. BY:	DATE
C		INCORPORATED ECO'S 367,590,602,619, 621,624,625,627,630.	KR	CR	6-8-95
D		INCORPORATED ECO'S 640,657,676,688, 716,738,764,769,834,858,959.	KR	ES	5-24-96
E	993	SB REDUCTION, ADD TEST VIAS	KR		9-6-96
S	862 987	50KG POTS TO ALPS AUTO INSERT LED'S W/SPACER	KR		10-17-96



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS: DECIMALS: ANGLES: ±NA .XX ±.01 ±NA .XXX ±.005	CONTRACT NO:		
MATERIAL: SEE NOTES	APPROVALS	DATE	MACKIE. Mackie Designs Inc. Woodinville, Wa.
FINISH: SEE NOTES	DRAWN: trh	4-21-95	SCHEMATIC, CHANNEL 1, SR 24-4
DO NOT SCALE DRAWING	CHECKED: Chuck	6-2-95	
	ISSUED: MS	6-2-95	SIZE D — DWG. NO. 990-050-00 — REV. S
	ENG: JGG	6-2-95	SCALE: NONE — SHEET 1 OF 14
	MFG: Angie	6-2-95	

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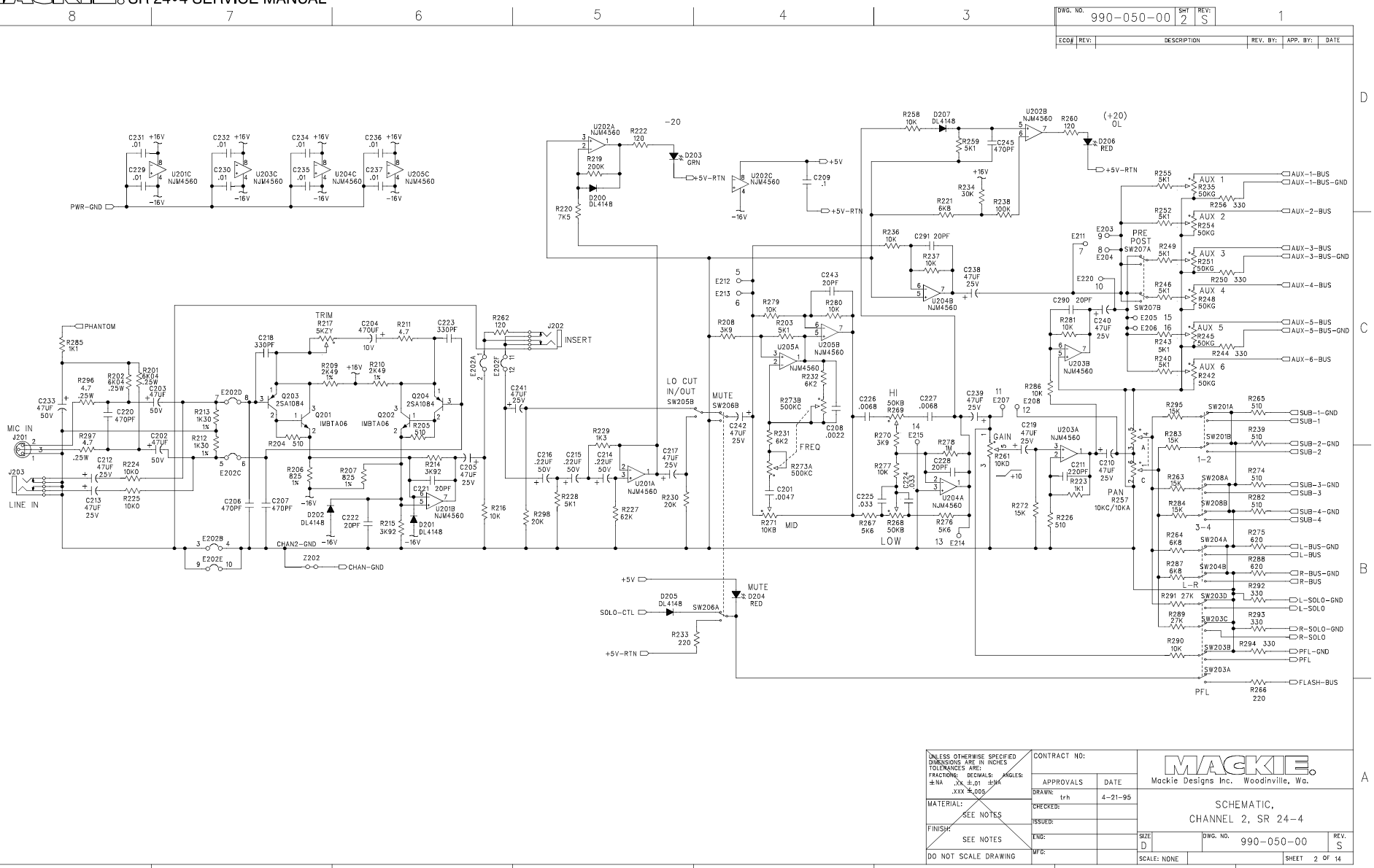

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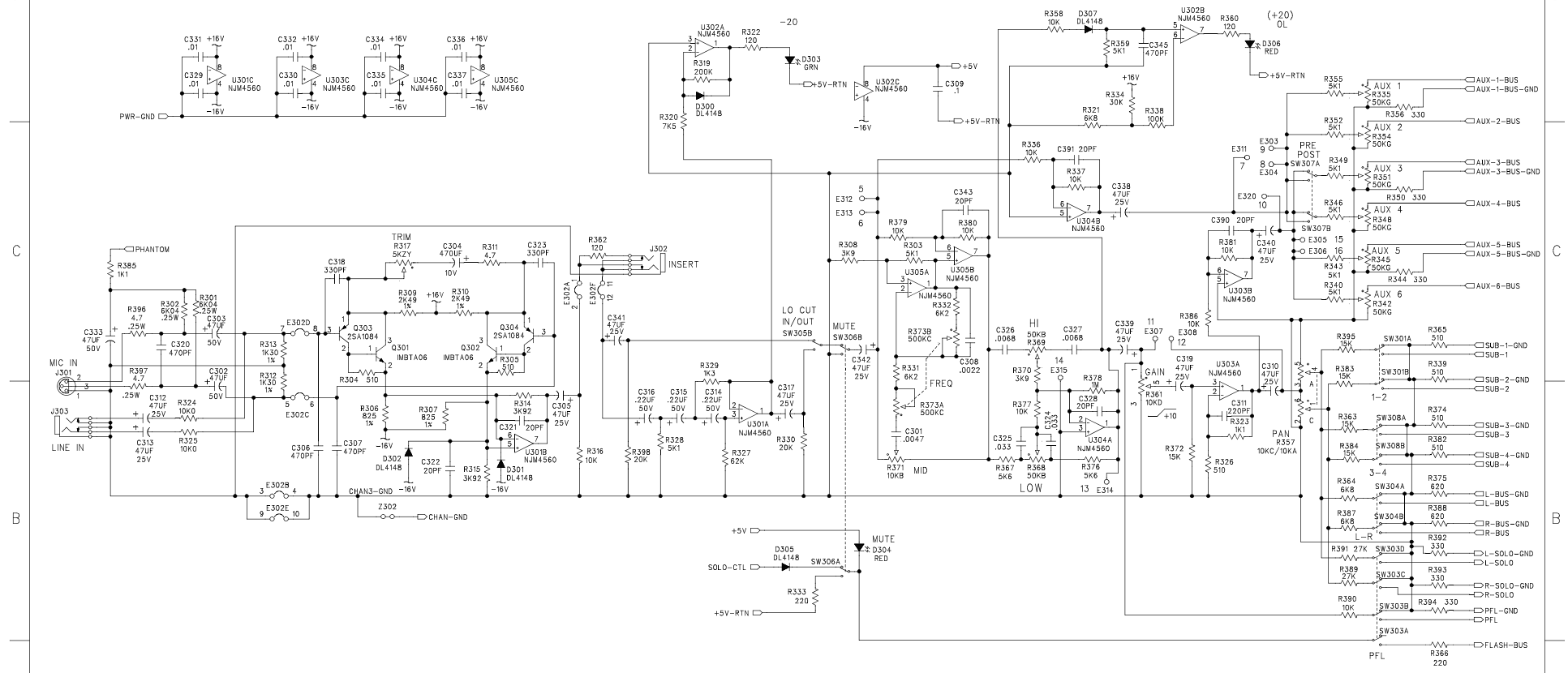

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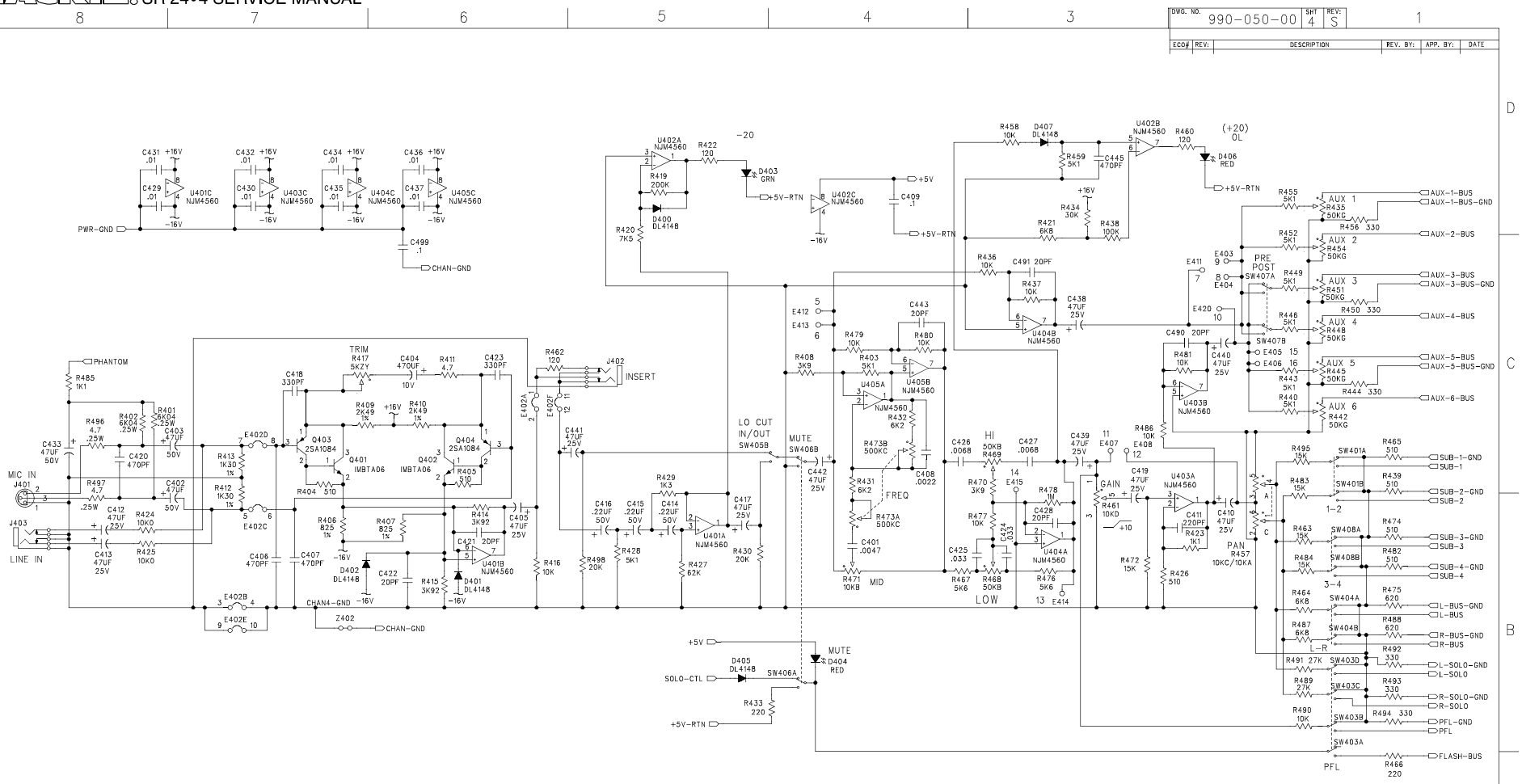

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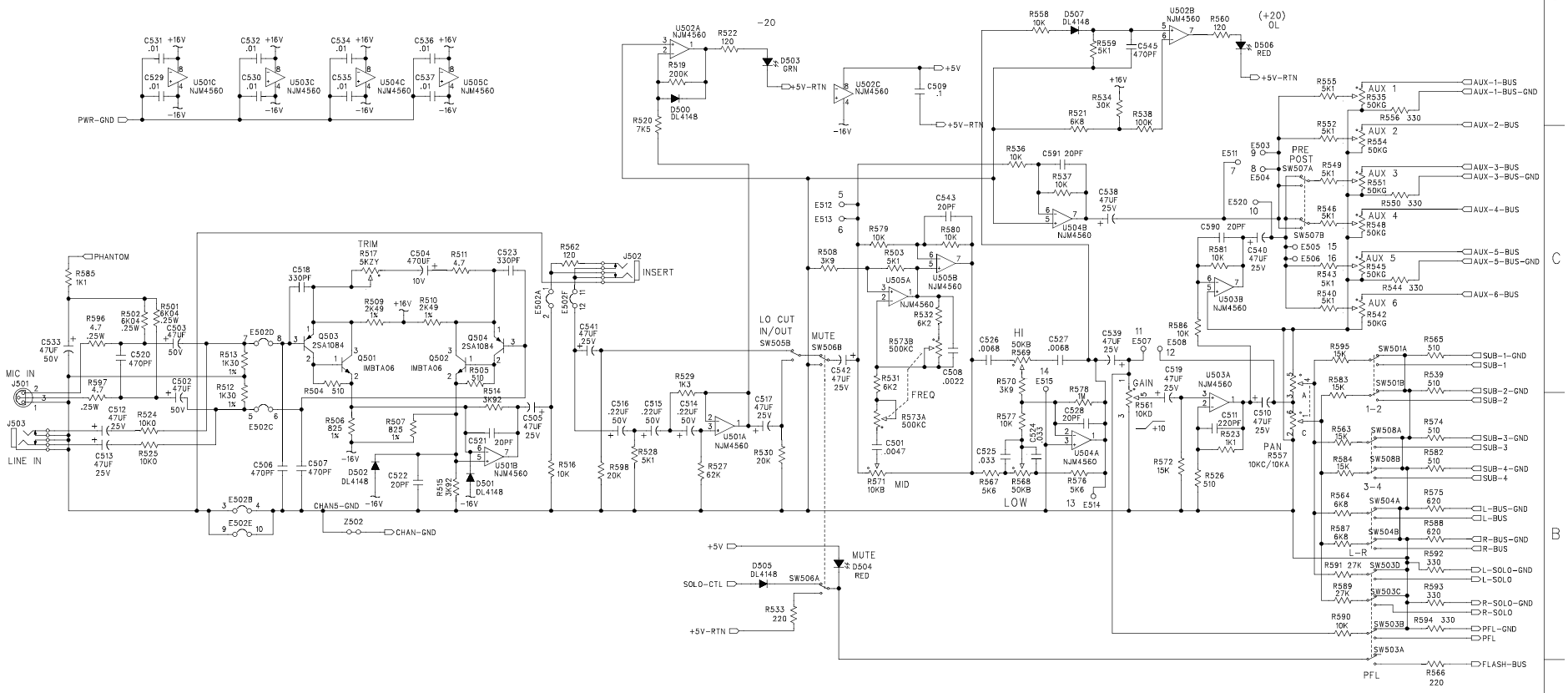

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS: DECIMALS: ANGLES: ±NA .XX ±.01 ±NA .XXX ±.005	CONTRACT NO:		Mackie Designs Inc. Woodinville, Wa.
	APPROVALS	DATE	
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MATERIAL: SEE NOTES	CHECKED:		
FINISH: SEE NOTES	ISSUED:		SIZE D / DWG. NO. 990-050-00 / REV. S
DO NOT SCALE DRAWING	ENG:		SCALE: NONE / SHEET 5 OF 14
	MFG:		

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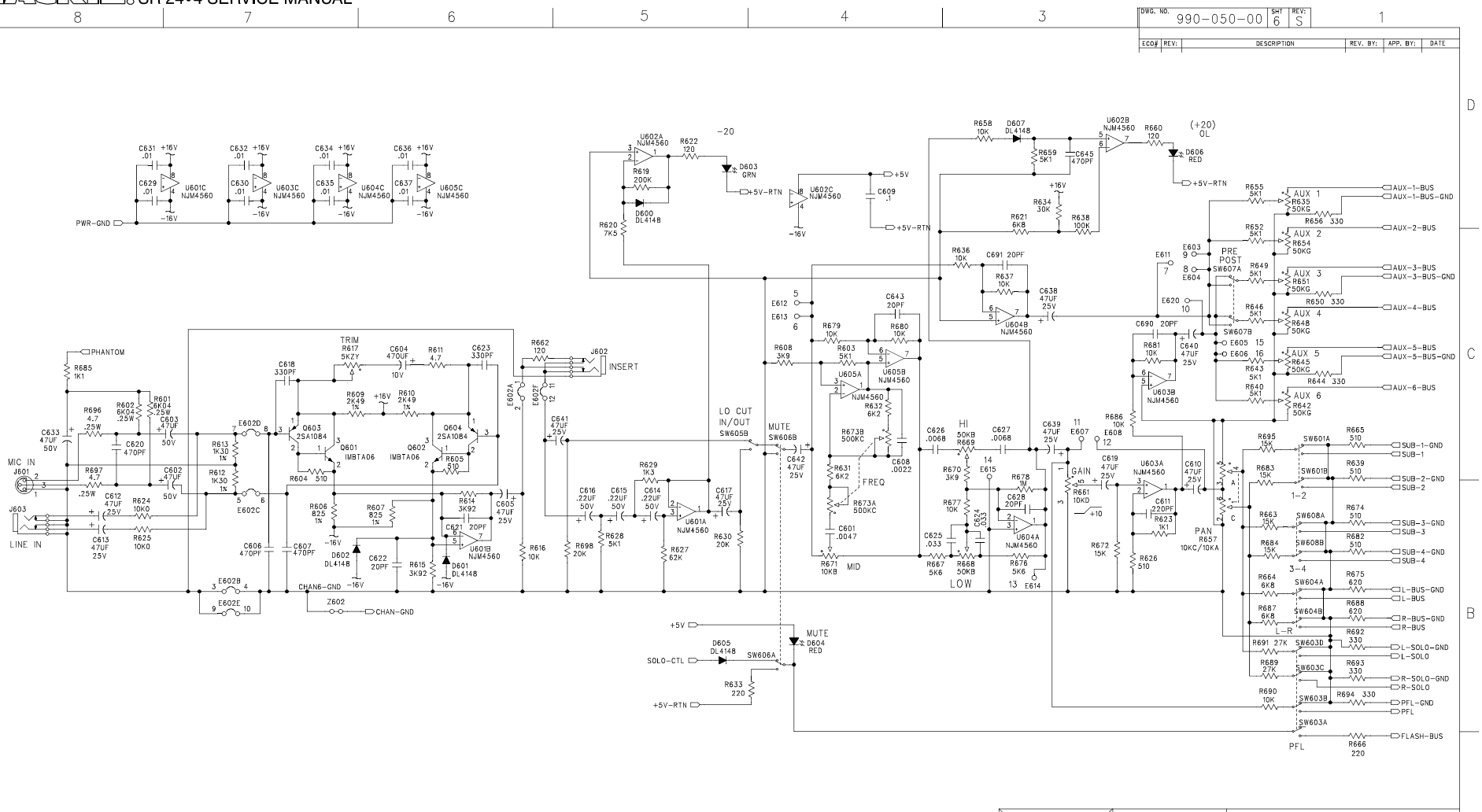

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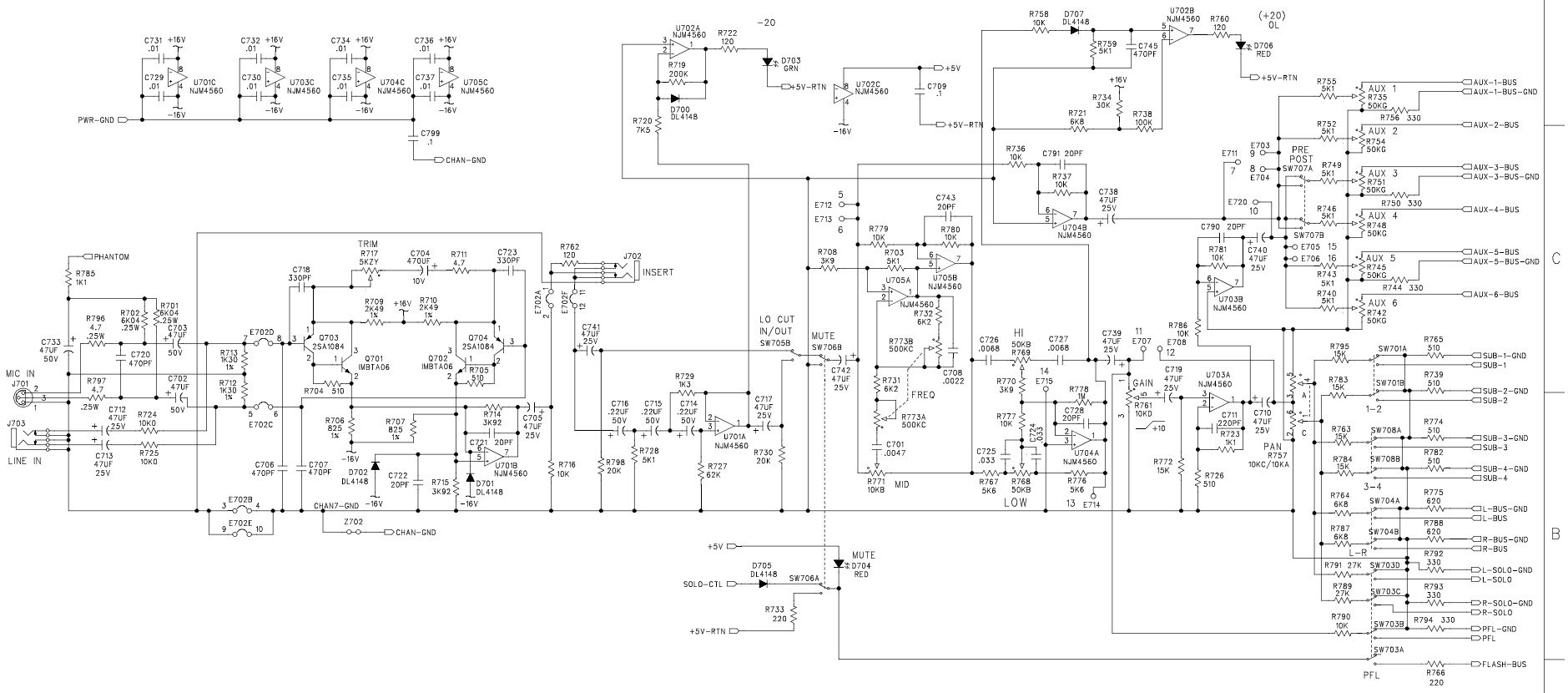

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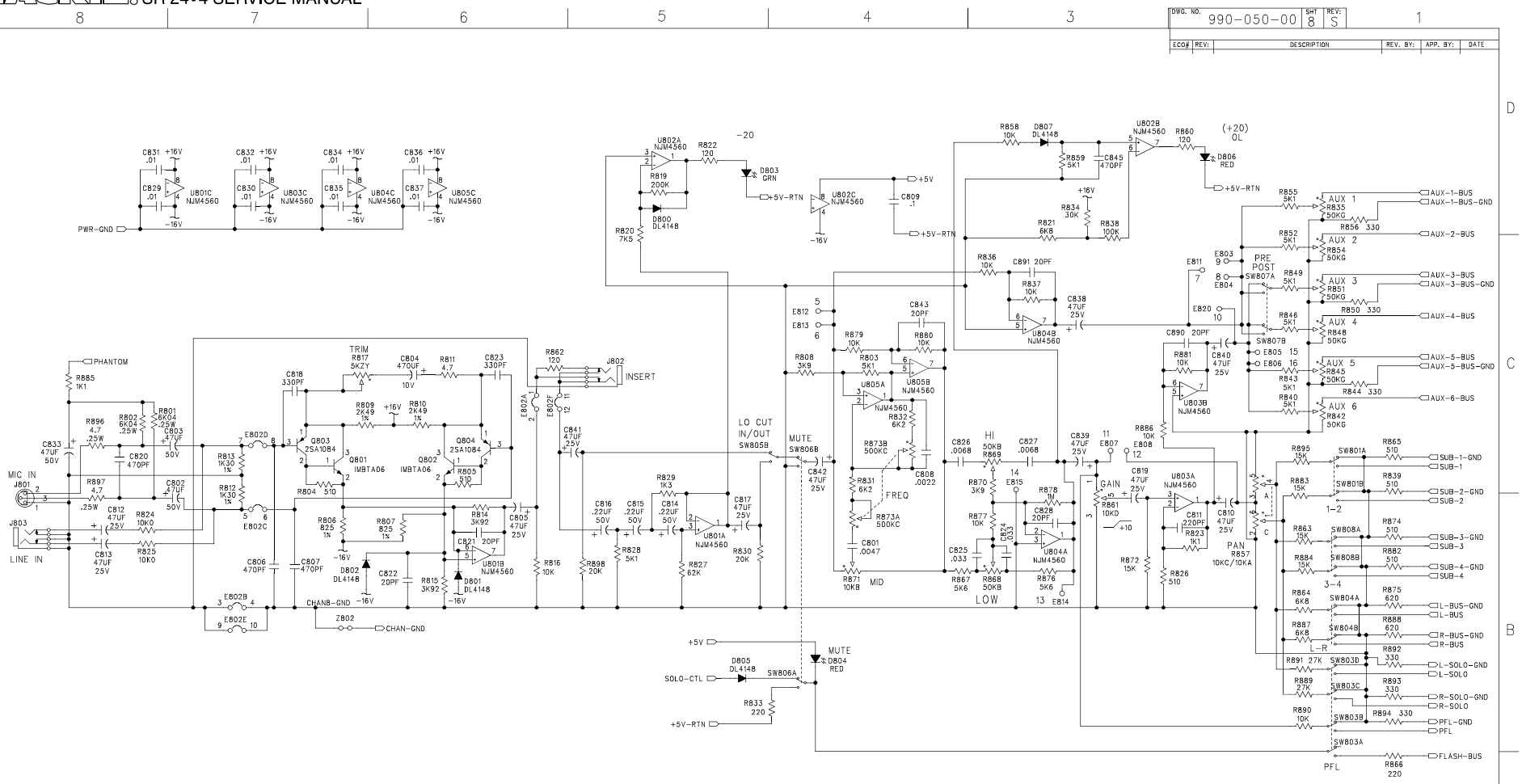

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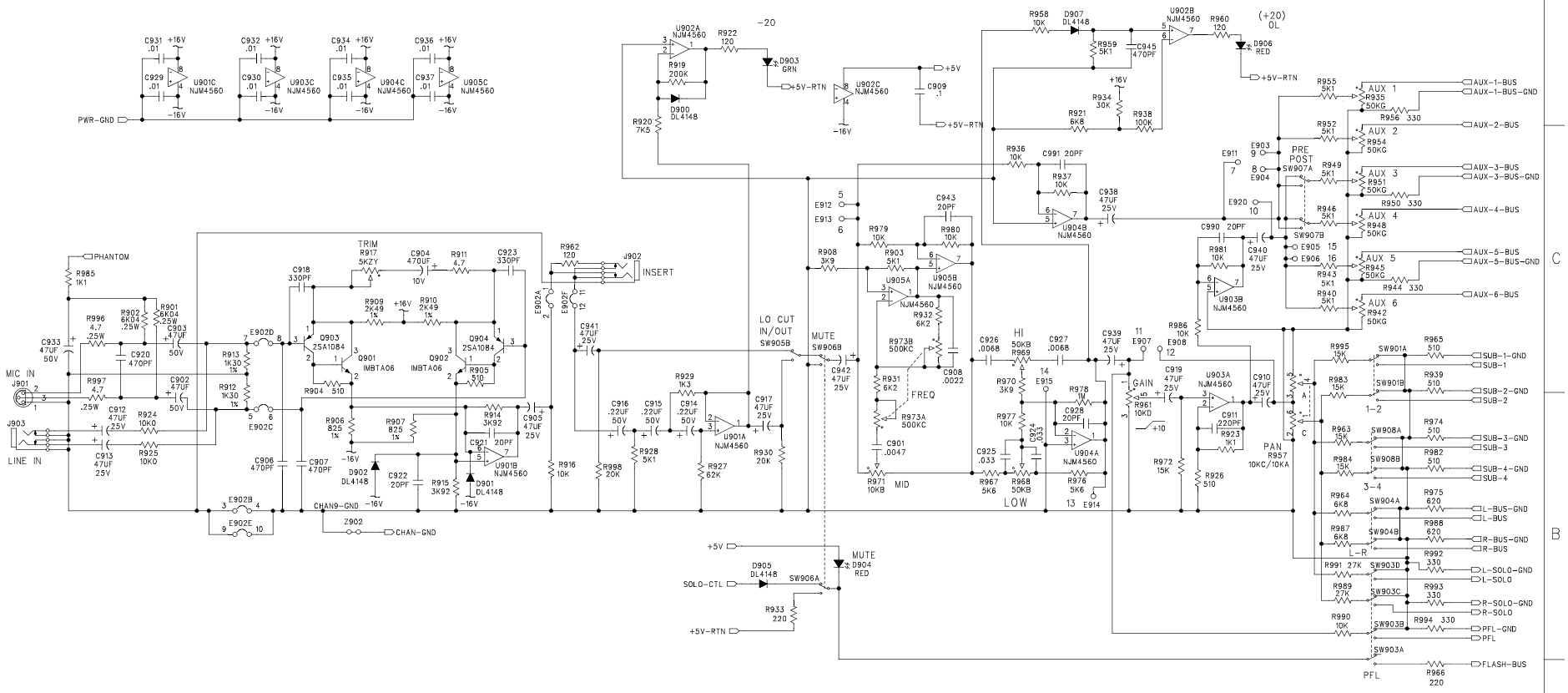

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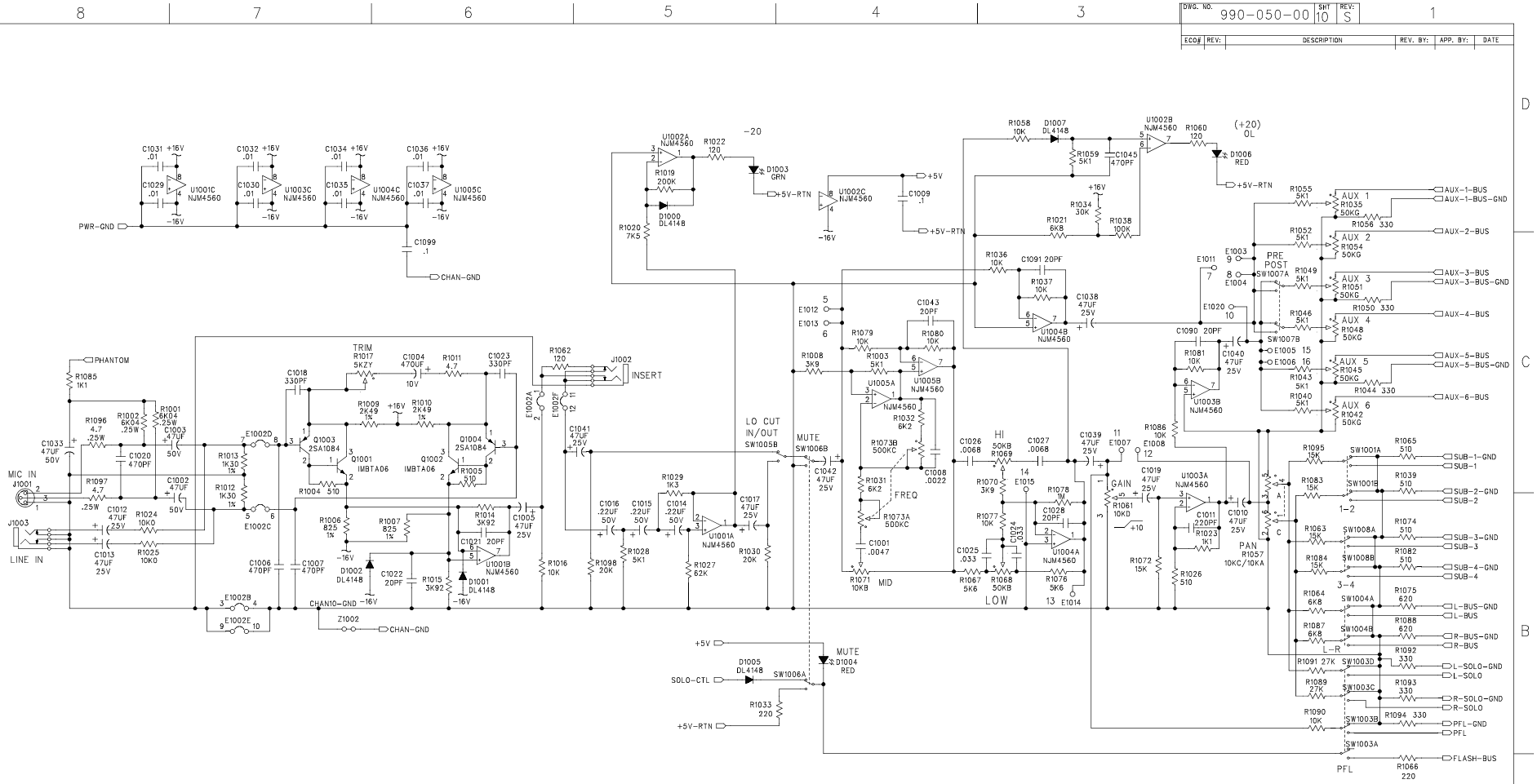

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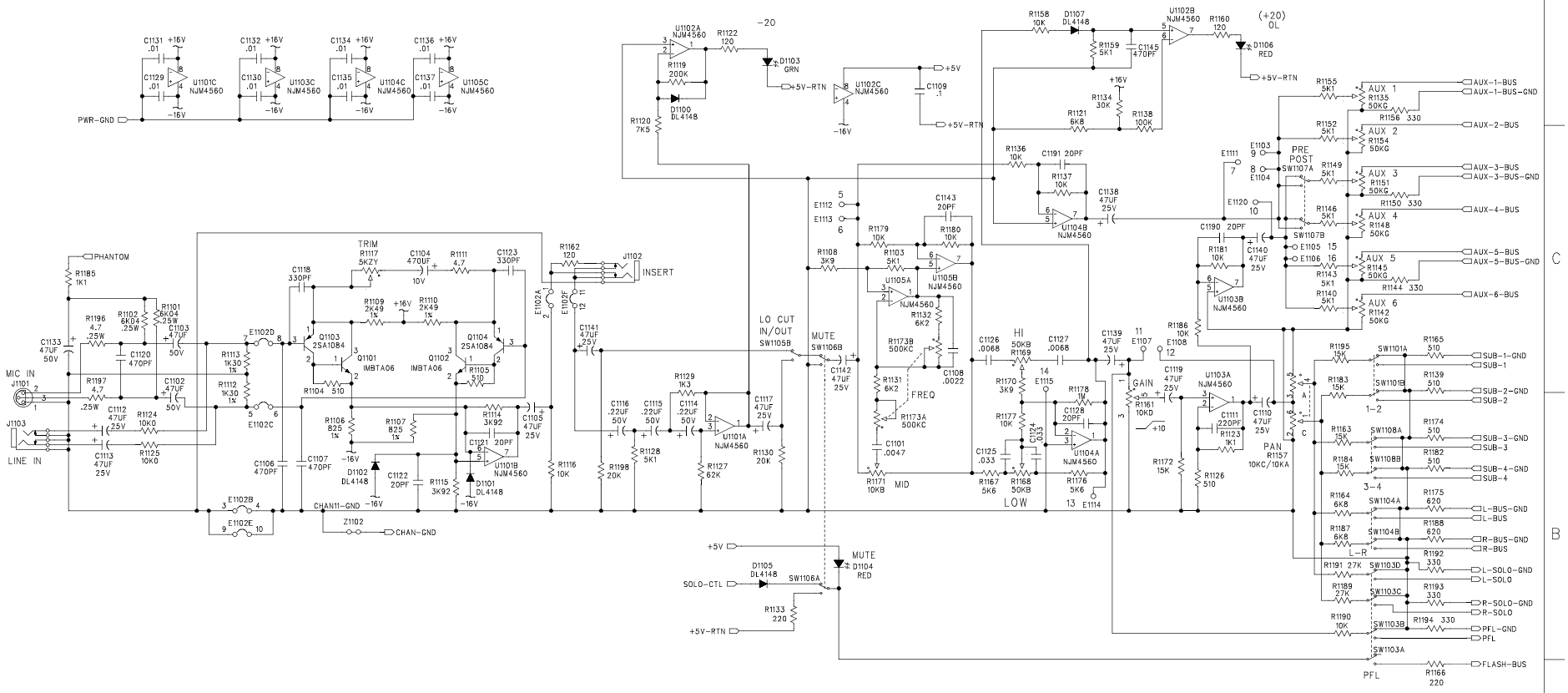

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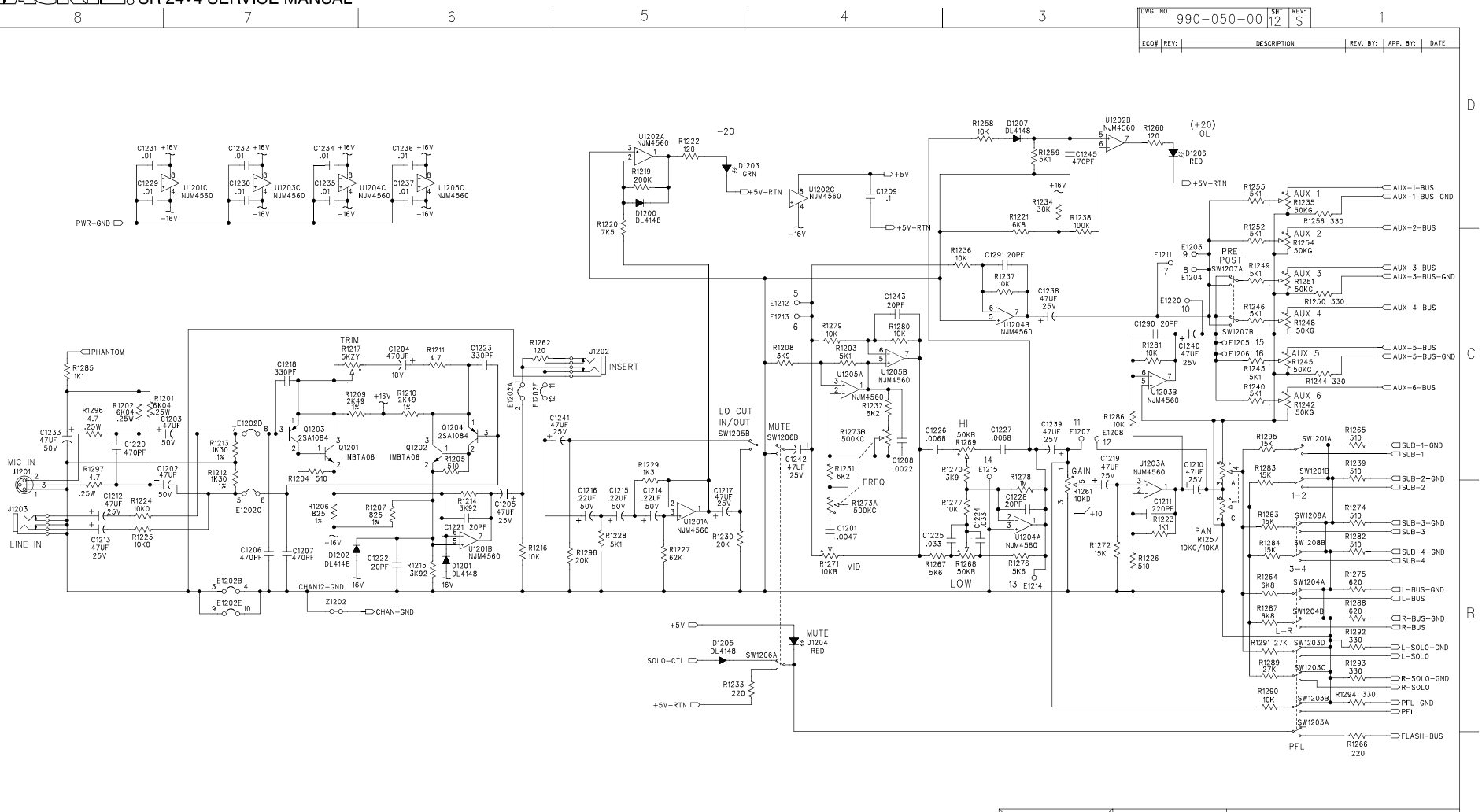

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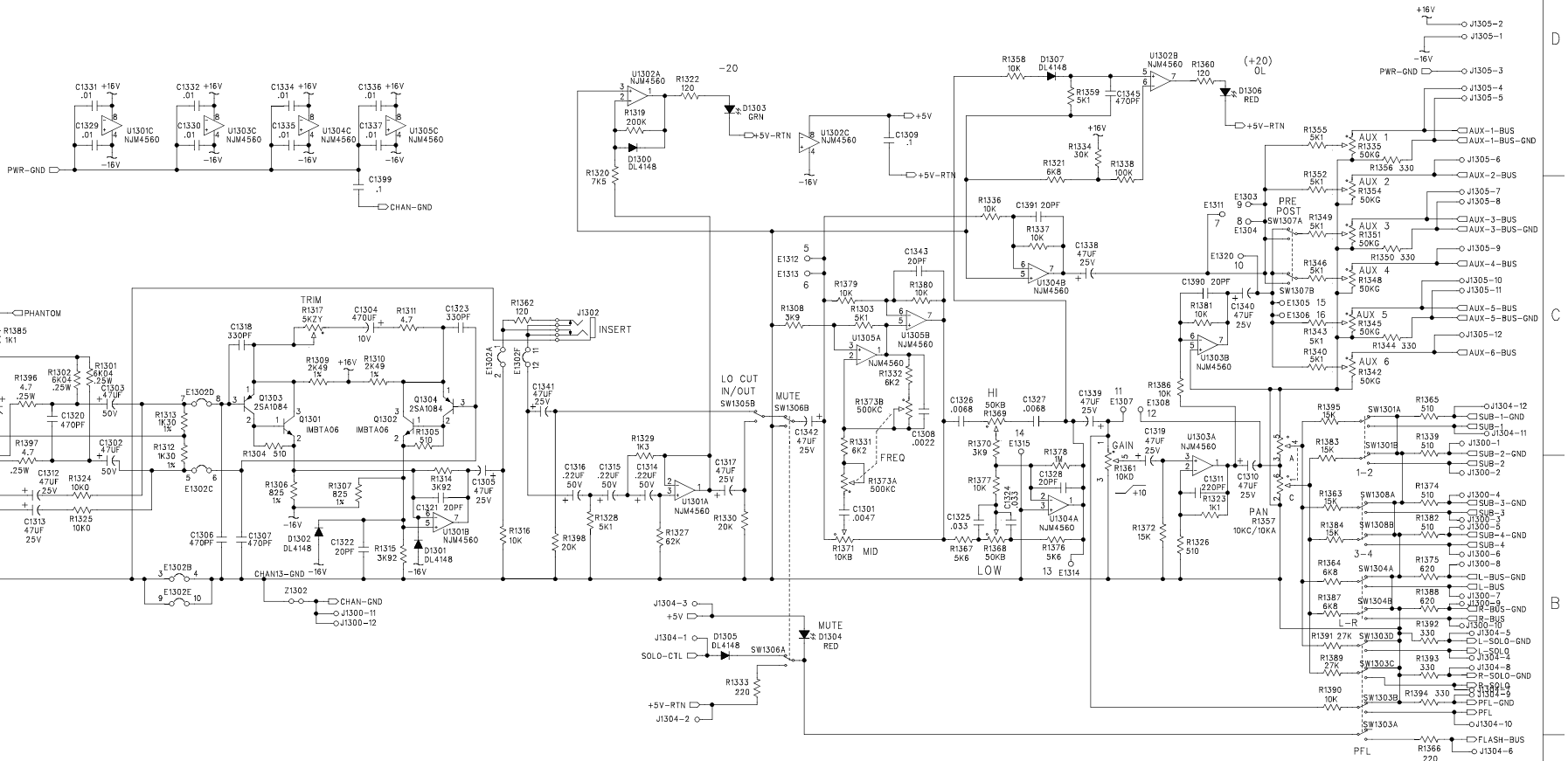

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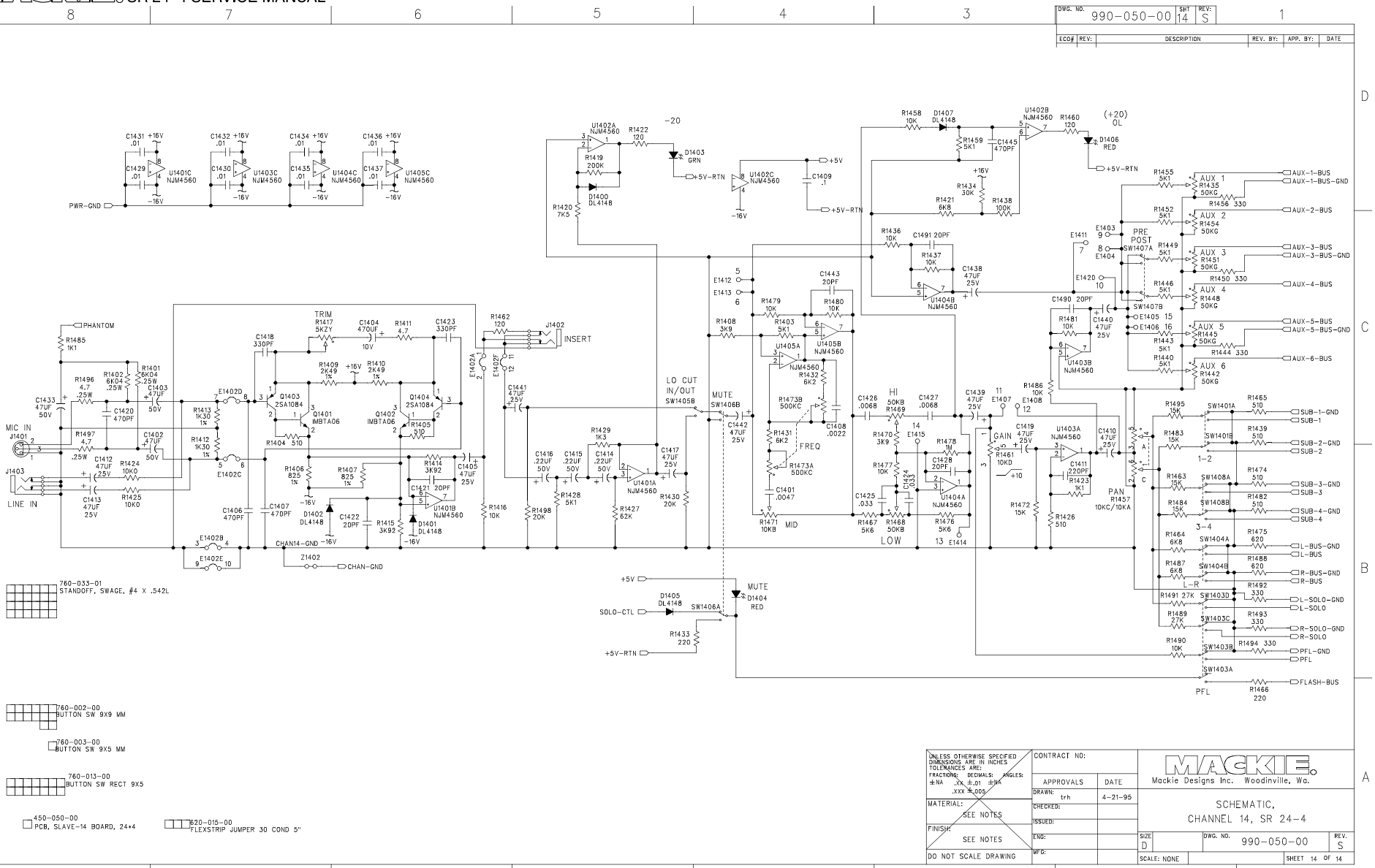

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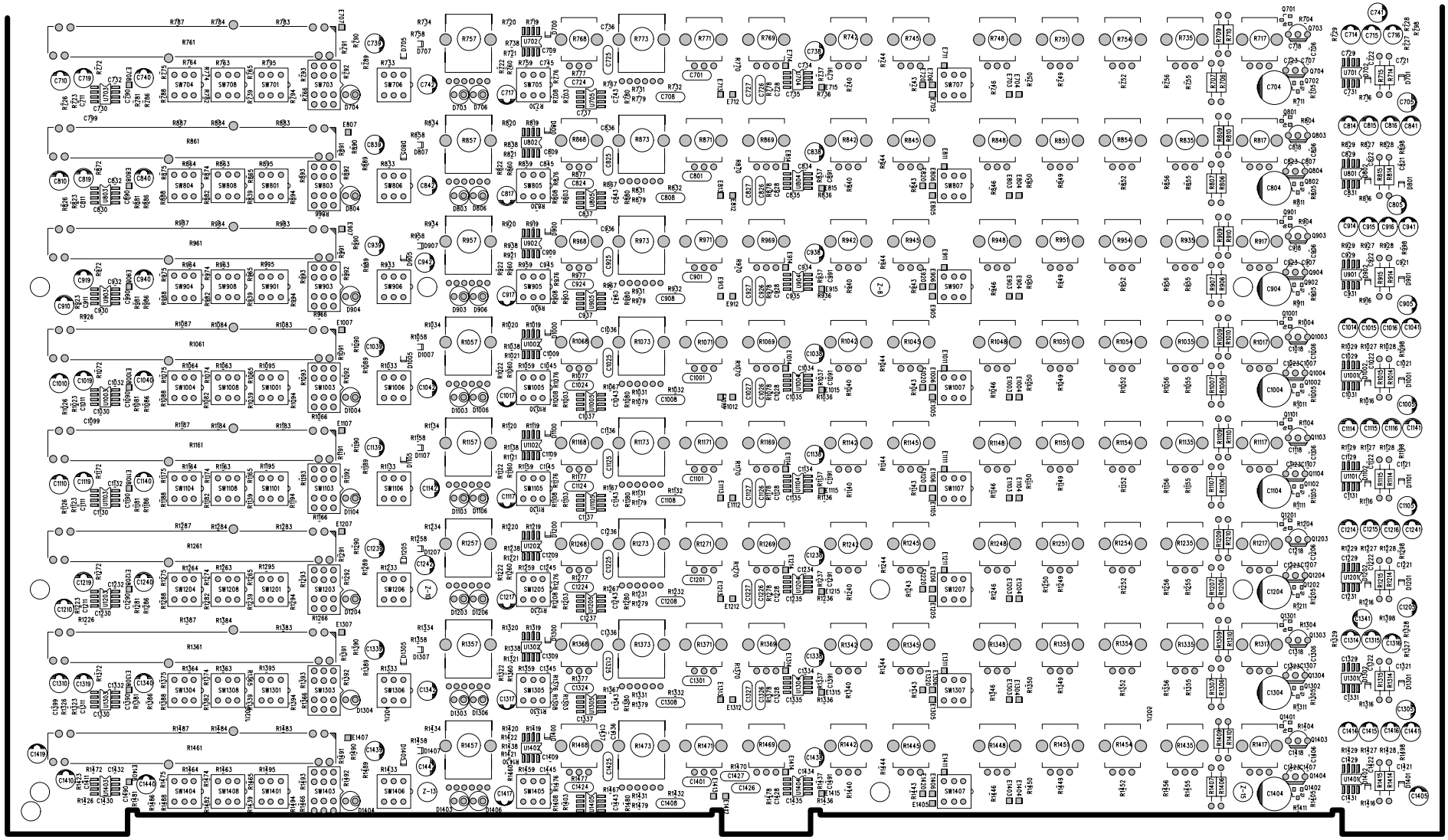

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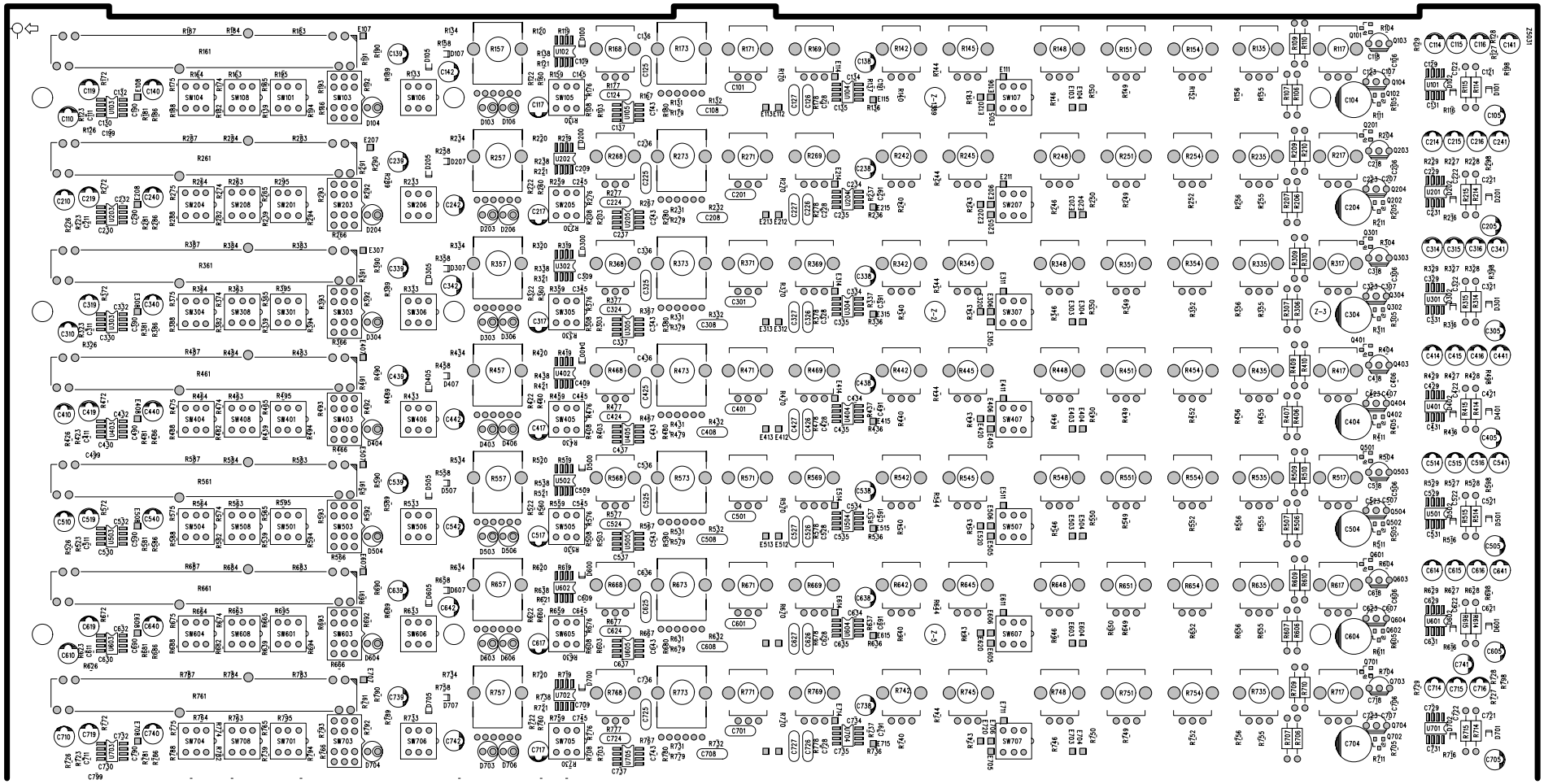

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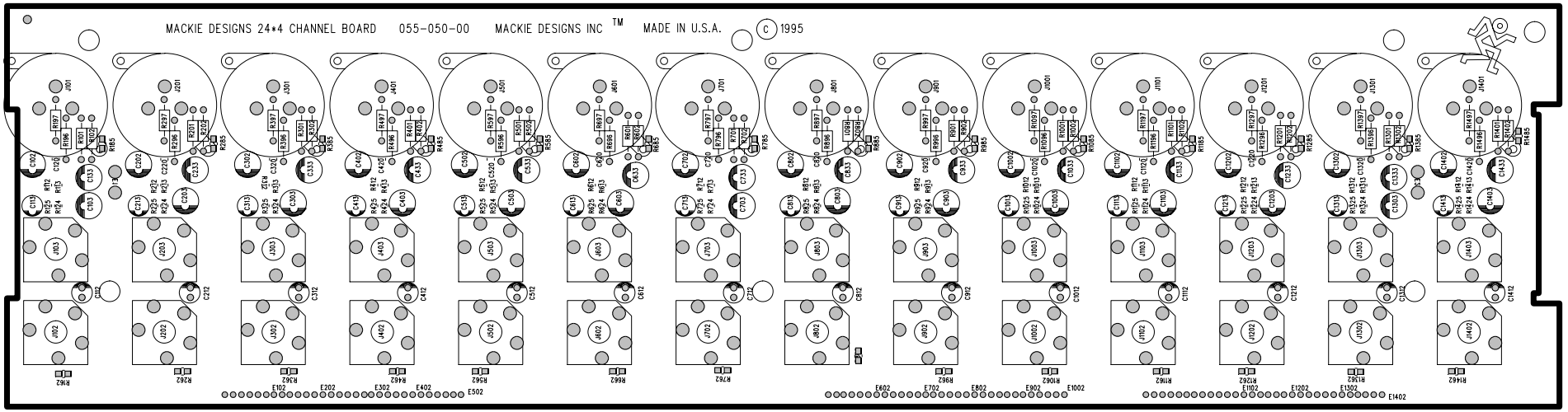

This board is a snap-off from the board on the previous pages

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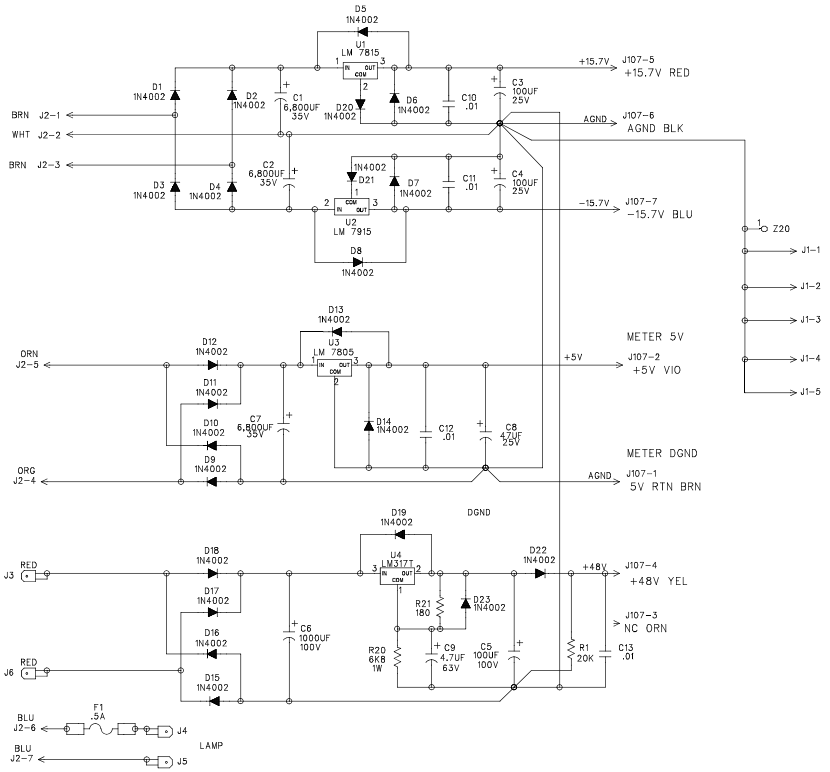
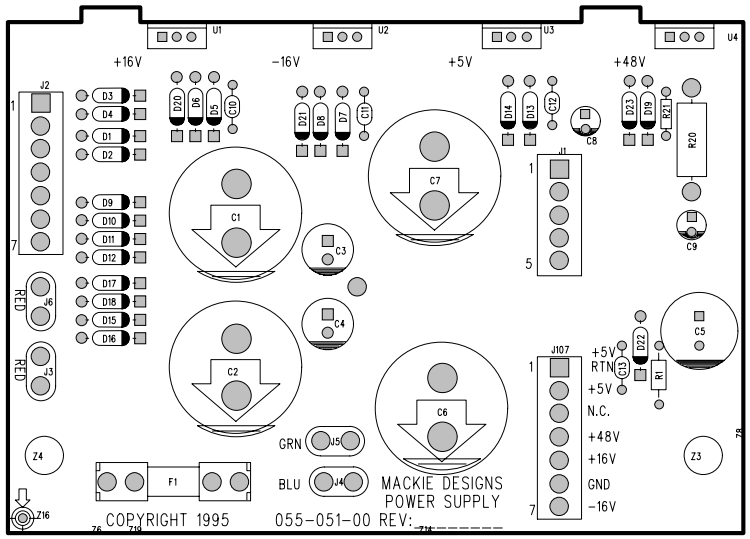
DWG. NO.	SHT	REV:
990-051-00	1	A

ECO#	REV:	DESCRIPTION	REV. BY:	APP. BY:	DATE
	A	RELEASED TO PRODUCTION	TRH		8-10-94





UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS: ±NA DECIMALS: .XX ±.01 .XXX ±.005 ANGLES: ±NA	CONTRACT NO:	MACKIE. Mackie Designs Inc. Woodinville, Wa.
MATERIAL: SEE NOTES	APPROVALS / DATE	SCHEMATIC CR 24•4 POWER SUPPLY
FINISH: SEE NOTES	DRAWN: trh 6-15-94	SIZE D — DWG. NO. 990-051-00 — REV. A
DO NOT SCALE DRAWING	CHECKED: / ISSUED: / ENG: / MFG:	SCALE: NONE — SHEET 1 OF 1

- 450-051-00 PCB, SR24•4 POWER SUPPLY
- 400-060-00 FUSE CLIP PC MT 5MM DIA
- 400-060-00 FUSE CLIP PC MT 5MM DIA
- 706-008-00 STAND OFF SWAGE
- 706-008-00 STAND OFF SWAGE

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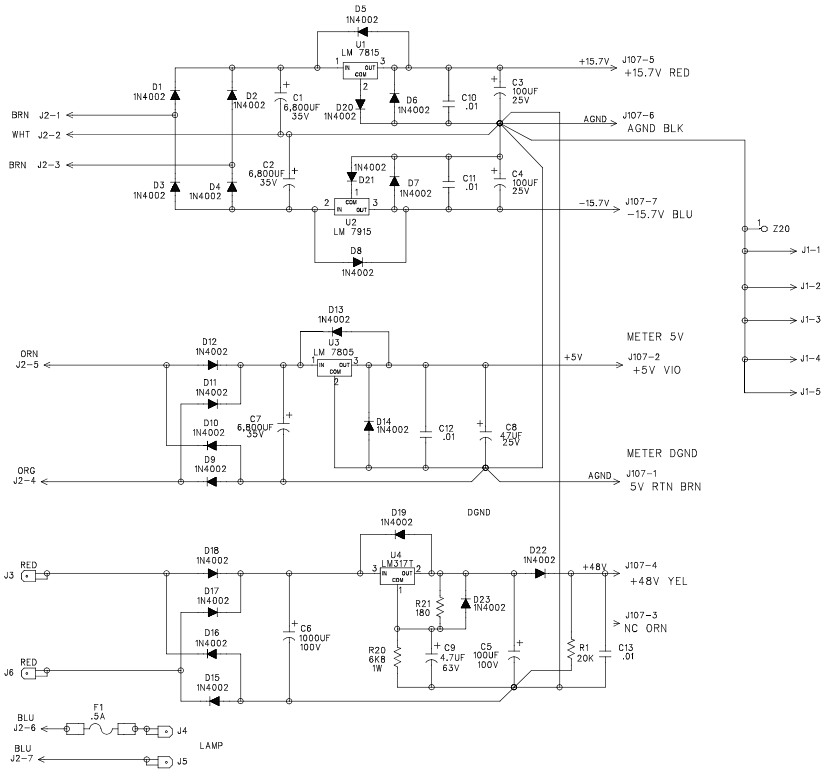
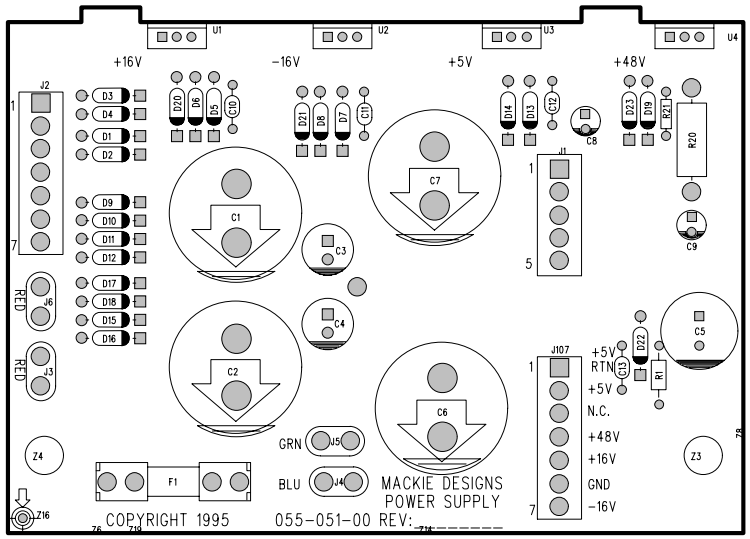
DWG. NO.	SHT	REV:
990-051-00	1	A

ECO#	REV:	DESCRIPTION	REV. BY:	APP. BY:	DATE
	A	RELEASED TO PRODUCTION	TRH		8-10-94





UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS: ±NA DECIMALS: .XX ±.01 .XXX ±.005 ANGLES: ±NA	CONTRACT NO:	MACKIE. Mackie Designs Inc. Woodinville, Wa.
MATERIAL: SEE NOTES	APPROVALS / DATE	SCHEMATIC CR 24•4 POWER SUPPLY
FINISH: SEE NOTES	DRAWN: trh 6-15-94	SIZE D — DWG. NO. 990-051-00 — REV. A
DO NOT SCALE DRAWING	CHECKED: / ISSUED: / ENG: / MFG:	SCALE: NONE — SHEET 1 OF 1

- 450-051-00 PCB, SR24•4 POWER SUPPLY
- 400-060-00 FUSE CLIP PC MT 5MM DIA
- 400-060-00 FUSE CLIP PC MT 5MM DIA
- 706-008-00 STAND OFF SWAGE
- 706-008-00 STAND OFF SWAGE

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